POPULAR Computing WEEKLY

Only 50p.

with Home Computing Weekly

6-12 February 1986

It's the best selling weekly

Vol 5 No 6

Amstrad to launch new PCW machine

AMSTRAD is to launch its fifth microcomputer next month – an expanded version of the PCW 8256.

The new PCW is self-explanatorily named the PCW 8512. It will essentially be the same as the 8256 but with an extra 256K of Ram. It should, therefore, be entirely upwardly compatible with the existing model.

However, Amstrad is not expected to drop the successful PCW 8256, as it did with the CPC 664 when the 6128 appeared. The two will both be available and supported, although there will inevitably be a gradual phasing towards the larger memory version.

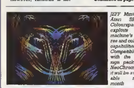
Nor does the 8256 look set for a price cut on the introduction of the 8512. The new

Continued on page 4 ▶

ATARI 520ST SERIES

This week: the potential of the 68000 processor

see p14



JEFF Minter's Atari 520ST Colourspace exploits the machine's hi-res and colour capabilities. Compatible with the design package NeoChrome, it will be available next month



ARIOLASOFT is to release the *Degas* graphics program for the Atari ST licensed from US firm Batteries Included.

The program allows for the creation of detailed graphic designs.

A wide variety of brush styles are available and text may be added to the screen in a variety of fonts – a font editor program is included.

Images may be copied or redrawn to any section of the screen and may be overlayed so that the background design is still visible.

Degas will work in any of the ST modes with 500 colours in the lowest. The program is entirely mouse-controlled and runs under the TOS operating system.

Degas will be released by Ariolasoft in February. A price has not yet been set.

THIS WEEK'S NEWS

INSIDE ❯ FIFTH SPECIAL OFFER COUPON TO COMPLETE YOUR CARD—P8 ❯

CONTENTS

Vol 5 No 6

EDITORIAL

The phenomenal success of *Soft Aid* has spawned two new aspects in the software industry the appeal of compilation tapes and, rather more altruistically, the potential for fund-raising through software. In addition to *Soft Aid's* successor *Off the Hook*, War on Want is now planning a charity tape to be released in April. Two things can now happen. Either *Soft Aid* has increased people's awareness of how they can directly help others and the two new projects will be a deserved success, or they will feel they have already 'done their bit'.

Certainly neither of the latest projects has the hard-hitting emotional appeal of the Ethiopian famine, with its attendant horrific pictures on TV and in the press. Nor do they have the publicity that Bob Geldof, Band Aid and Live Aid achieved when virtually the whole population aged 40 or under felt directly involved with the efforts.

Drug abuse the subject of *Off the Hook*, are much misunderstood – the aim of *Off the Hook* needs much more expansion and clarification than *Soft Aid*. Its organiser Rod Cousens knows it won't top the £380 000 raised for *Soft Aid*. War on Want's tape's proceeds will go to its general funds and the charity simply wants to spread its own message to a potentially different audience.

Can these two waken people's consciences the same way? Software companies, and satellite industries, such as duplicators, have been consistently generous in donating programs, and services for charity tapes, and it is up to the computing public to follow that lead.

Anyone who can afford to buy software can afford to help those who can barely survive, whether through famine or drug addiction.

Editor Christina Erskine **Features editor** Graham Taylor **Software editor** John Cook **Production editor** Lynne Constable **Editorial secretary** Lucinda Lee **Advertisement executive** Diane Halyzak **Advertisement executive** David Oxon **Classified Executive** Jon Beales **Administration** Geraldine Smyth **Managing editor** Peter Worlock **Publishing director** Jenny Ireland. **Published by** Sunshine Publications Ltd. 12-13 Little Newport Street London WC2H 7PP Tel 01-437 4343 Telex 296275 **Typeset by** Publishers Reprographics Services Ltd. 4 Roger Street, London WC1, **Printed by** Greenaway Harrison, Sutton Road, Southend-on-sea, Essex **Distributed by** S M Distribution, London SW9 Tel 01-274 8611 Telex 261643 © Sunshine Publications Ltd 1986

ABC
98 082 copies sold every week
(Jan June 1984 ABC)

Popular Computing Weekly. Tel: 01-437 4343.
How to submit articles Articles which are submitted for publication should not be more than 3000 words long. The articles and any accompanying programs should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here – so please do not be tempted. We cannot guarantee to return your programs – so please do not send your only copy. **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.
Computer Trade Association Magazine of the Year





Musical bundles for the Commodore 64

NEW bundling deals on the Commodore 64 have been announced by Commodore and Music Sales

One package offers the Commodore 64, C2N data recorder, Music Sales' *Sound Expander* module and software, a full-size five octave keyboard, and two pieces of software, *Music Maker 2* and *Sound Studio* This pack will cost just £299 Bought separately, these products would total over £400 in price

Music Maker 2 is the new version of *Music Maker*, a beginners' guide to writing music, it uses a menu/windows style of screen presentation.

The second 'bundle' is for existing Commodore 64 owners, and comprises the music hardware and software listed above, for £149 99

"The *Music Sales* products from Commodore will still be sold on their own, but obviously the price is not so attractive," said Gabriel Butler of Music Sales

The new packages should be on sale by the beginning of March, in both specialist music shops and some high street stores

Music Sales is also working on a composer package to complement the *Sound Expander* module It will enable users to lay down up to eight tracks, with notation shown on screen and a print out facility

Activision goes on to 16-bit

GOOD news for games-starved Atari ST owners. Activision, one of the leading entertainment software companies, has announced it will be releasing 16-bit software in the UK

This follows the launch of a number of 16-bit titles by Activision US at last month's CES

Versions of its Commodore 64 programs *Hacker*, *Mindshadow* and *Music Studio* have been enhanced and converted to the Atari 520ST and Commodore Amiga. The first two will also be available for the Apple Macintosh.

Activision UK's managing director Hugh Rees-Parnall hopes that ST versions of *Hacker* and *Mindshadow* will be available this month, with Amiga versions available as soon as the machine is launched in the UK Availability on the Mac has yet to bee decided

The two adventures will each cost £24 95, and *Music Studio* £29 95

Sinclair's TV rights sold to Timex

SINCLAIR has sold all marketing and distribution rights in its flat screen TV to Timex, which has manufactured the pocket television in Dundee since its launch.

This means that although the TV will retain Sinclair's name, the company will not have much involvement in the product The income gained from the deal will help the company considerably, since it is still slowly recovering from the financial crisis of last summer

However, Sinclair will continue with research and development in flat screen technology at its Cambridge headquarters It is still hoped to use a derivative of the flat screen in Sinclair's portable computer

"Flat screen technology was always intended to be used in Sinclair's computers, as indeed is the wafer scale research," commented a Sinclair spokesman "Odd products – that is, those that are not part of the original long term plan – can then always to be released from that research The pocket TV was one such opportunity."

Timex has a number of projects planned for the TV, including a version for export with both UHF and VHF facilities It has also annonced a price cut – from £99 95 to £79 95

Amstrad PCW 8512

◄ Continued from page 1

machine will cost £100 more, around £580 (£499 plus VAT)

Malcolm Miller of Amstrad commented, "I have no details about this at the moment. When the machine is available, there'll be more details then"

The PCW 8512 is only one of Amstrad's planned launches this year Its 16-bit business micro targeted firmly at the IBM-PC market (see *Popular Computing Weekly*, December 5, 1985), now appears to be scheduled for launch in the late summer

Sinclair retains clear market lead in 1985

TWO surveys of the home micro market, announced last week, have produced startlingly different analyses of hardware performances in 1985

The reports from market researcher AGB, and stockbroker Wood Mackenzie,

Spectrum Plus – still the leader

both estimate that Sinclair retained its market leadership of the UK market AGB gives Sinclair a figure of 37% of total home computer sales while Wood Mackenzie's figure is 35%

Further down the list, things differ AGB places Commodore second with just over half Sinclair's percent age Wood Mackenzie places Amstrad second with 23%, and Acorn third with 19%, with Commodore fourth AGB places Acorn third and Amstrad fourth.

The differences in opinion may partly be explained by the fact that both Commodore and Acorn were selling machines in large quantities for well under £100 Commodore get rid of large stocks of the Plus/4 and C16 in this way, while Dixons took on 150,000 Acorn Electrons to sell before Christmas The high sales of these machines has distorted the market to a certain extent.

Additionally, Wood Mackenzie included Amstrad's PCW 8256 as a home computer in its research. It is not clear whether AGB counted PCW sales in its report.

A third report, from IDG, which has been out for some months but contains forecasts up to 1990, shares AGB's view, that Commodore is a consistent second to Sinclair in the UK market.

Wood Mackenzie has also published forecasts for the home computer market in the next two years

While it estimates that unit sales of micros in 1985 fell by nearly 17% to 1 1 million, and that 1986 sales will be around the 760,000 mark, it says the value of the market will increase from £236 million to around £262 million, because of the higher prices of newer micros, such as the Atari 520ST, Amiga, C128 and Amstrad's machines.

It also intriguingly predicts a re-emergence of the MSX standard in 1987, with the next generation of the Japanese built computers to be used exclusively in the home

Multi-micro networks out for ST and 6128

TWO powerful hardware networks have recently been launched, one using the Atari 520ST, the other the Amstrad CPC 6128

Northern Computers has now demonstrated its Amstrad 6128 hooked up to a network driving a 20M hard disc and Canon laser printer at two UK shows This network supports unlimited numbers of machines across any distance This is achieved by making all network interfaces intelligent so that no central fileservers are needed

It is also capable of connecting the Amstrads to BBC Bs, Apricots, Apples and IBM PCs

However, the cost is upwards of £150 per machine on the network The 20M hard disc costs around £1,000

Atarinet is the Atari 520ST network, supplied by Liverpool company Software Punch. It offers similar capabilities to the Amstrad network, but incorporates the attractions of the Gem interfaces, which allows full icon control of all features It can support 250 users on one net, and five users can act as bridges to other networks It also features multi-tasking for system management, electronic mail and print spooling Software Punch also supplies its own hard disc – a 10M version for £960 and a 20M version with a 20M tape streamer for £1,150

Kempston mouse becomes an objet d'art

THE *Art Studio* from OPC is now also available as a package comprising Kempston's new Spectrum mouse and interface, and the program Kempston's mouse is not, initially, being offered as a stand-alone product

The two together will cost £69 95, the normal *Art Studio* price

Commodore – will it file for Chapter 11

SPECULATION that Commodore International may file under the US's Chapter 11 ruling were rife last week Commodore's loan agreement with its bankers expired on Friday, but Commodore says its bankers have extended the deadline through this month

Chapter 11 forms part of the US's bankruptcy rules It affords a company protection from its creditors – with a time limit – while a rescue plan is put together Companies can continue to trade almost normally while under the ruling, if that is deemed the best way of regaining profitability

Late last year Commodore executives said that the company was not considering filing under Chapter 11 However, Egil Juliussen, president of American analyst Future Computing, now says, "If the bank calls in the deadline, then they have no choice but to file for Chapter 11 Although the US rules are reasonable, the problem is one of perception with customers and dealers Even if they do file, they still have plenty of time to reorganise – it would be a big blow, but not the end of the world

"I'd guess it would be about 50/50 whether they file or not "

However, Juliussen predicts that Commodore could sell around 20,000 Amigas per month in the US in 1986 "The average price for the system seems to be around $2000," he said. "That works out at about $500 million this year in revenue – but will they have enough time? It all depends on the banks "

Commodore has said that Chapter 11 speculation is "completely ill-founded"

More news on p9

30 great games from leading software houses including Quicksilva, Bug Byte, Mind





Games, Lothlorien, Argus Press Software, Taskset, New Generation and Terminal
Adrenalin burning joystick testing tempting 30 Games. More than ever before in one pack on two tapes. only £9.95
GAMES
Mail Order
Please rush me copies of 30 Games at £9.95 each (price includes postage and packaging)
Machine Commodore 64
Spectrum
I enclose a cheque/postal order for £ made payable to Argus Press Software Ltd
Send completed form and your Cheque/postal order to.
Argus Press Software Ltd,
Units 1 and 2,
Conlon Developments,
Watery Lane,
Darwen,
Lancs

Letters

Just a myth

The idea that CP/M software is expensive ("Just the icing", Vol No3) is a myth. Whilst admitting that commercially produced software such as *Wordstar* is expensive, there is a large base of public domain software available which is very cheap, typically around £2.00 per disc. Obviously the number of programs on each disc depend on the size of individual programs.

I agree that the Amstrad is limited to 39.5K of Ram to run CP/M. But the Einstein has a full 64K and can, therefore, take full advantage of all CP/M programs available.

Keith Stokes
Hillcroft
Codmore Hill
Pulborough
West Sussex

Comprehensive

To balance the scales, I am writing in defence of Incentive's program *Graphic Adventure Creator* in response to the letters from Kevin Marks (Vol 5 No 2) and T Corby (Vol 5 No 4).

Referring to T Corby's letter, I am not sure what is meant by changing the map during play. It is certainly possible to alter the location during play in response to conditions. A further comment on the letter is that if it is found that *GAC* is so unsatisfactory, what other utility is used and how much does it cost?

I have found *GAC* very comprehensive, it also includes a form of compiler so that your final adventure can be saved as binary file – all things considered, I think good value for money.

Having said this, I do have one complaint and that is the inadequate documentation. For example, it does not clearly explain how to randomize the location of objects (so that each game is different), or point out that connections defined in Room Description takes precedent over any other conditions given, or how to pick up objects dropped in locations different from where they started. All these things are possible, but it takes some 'playing around' to find out how to do it.

I think that the problem here, as with a lot of programs, is that the documentation is written by someone who has been closely involved with the program for may be a year or more, and tends to take for granted things which a complete newcomer does not at first appreciate.

My own policy when writing instructions is to assume that I am writing for a moron, usually the instructions then turn out about right.

However, despite this criticism I feel that Incentive have produced a very powerful and useable utility.

Mick Ellick
3 Burrington Close
Nailsea
Bristol

SPECIAL OFFER

This is the last coupon to collect for our special Firebird/Arcade Champion's *Guide* offer. It's also the second coupon you need for the cassette label offer.

COUPON 5

Error traps

I am writing in reference to Nigel Mossman's Error Trap program in issue 2 (9-15 January 1986). He stated that errors generated by Interface One cannot be trapped. Well, it is actually possible to trap all the errors generated by IF1 and I have used the following method successfully in writing the AMX Control Basic extension program for the Spectrum AMX Mouse Package.

When the shadow system variables are installed, Bit 2 of the address 23734 tells the Shadow Rom whether to return via the error vector (pointed to by ERR SP), or whether to continue and produce an error report, when an error is generated. If this bit is set, then the Shadow Rom will always return via the error vector. All you need to do is make sure that this bit is always set.

Well you can't all be right

If you write a small interrupt routine to continually set the bit used with a routine which alters the error vector, then you can trap any error. There is one limitation with this method of trapping OF1 errors.

The means of obtaining the error code is lost during the jump to the error vector, so you can't find out what error Interface One had generated, although the code for an error generated by the 16K Rom can still be found as normal.

Karl Hampson
57 Harsnups
Birch Green 2
Skelmersdale
Lancs

Automatic?

I should be grateful if you would answer the following question. Is there a program available for the Spectrum enabling the user automatically to renumber program lines after interpolations and alterations?

Leo Bennett
2 St Peters Row
Spring Lane
Thrupp
Stroud Glos

Many toolkit programs for the Spectrum will do the job you require. OCP's Toolkit package will certainly allow you to renumber lines, and is a fairly powerful program.

OCP can be contacted at 77a Packhorse Rd, Gerrards Cross, Bucks, SL9 8PQ (0735 688888).

QNET-2

I am writing to introduce QNET-2 to you. We are a group of QL owners who currently have three *Gallery* pages on Prestel. This was formed when Prestel decided to cut QNET on page *80040 off in its prime.

We provide a service of news, technical help, hints and tips and competitions. The pages are updated on a regular basis.

At present we have just under 70 members and membership is growing at about three or four a week.

The other two co-editors are Martyn Amess who lives in Battle (Mailbox number 042464813) and Alex Robertson who lives in Crewe (Mailbox number 919995118). As you can see we are spread throughout the country – one of the advantages of Prestel! QNET-2 can be found on Prestel pages *323000112, *323000037 and *323000223.

Nigel C Barker
Co-editor of QNET-2
10 Purdue Close
Worle
Weston-super-Mare
Avon

A reappraisal

May I use your letters page to let off steam about something on which I feel very strongly.

The main reason for writing is the QL. Do people truly realise what they are getting for their money? I wonder, because the Motorola 68008 is one hell of a piece of silicon and QDOS is pretty good too. The early release of the machine seems to have knocked the QL for six which is a shame as at £399 it was excellent value for money, at £199 it is untouchable.

I promise you that I am not another dyed-in-the-wool Sinclair addict, but of all the processors and operating systems I have worked with, the QL has given me the most pleasure, and it's made in England.

Surely a reappraisal is called for?

L W Tomlin
71 Telford Rd
New Southgate
London N11 2RL

Psion's Organiser goes on a diet

PSION has signed a new customising deal, worth about £100,000, for its Organiser pocket computer.

The Organiser is to be marketed by Nume, a Norwegian nutritional products company as a 'diet computer'. Users will enter personal data, such as height, age and weight into the Organiser. The software will then calculate a planned diet programme over a specified period.



Gremlin gets down to business

GREMLIN Graphics, the company best known for its *Monty* games, is setting up a new label to publish utility programs.

The first title to appear under the Discovery label will be *Pyradev*, a programming development system on disc for Amstrad's CPC range.

Pyradev comprises five programs – a source file editor, Z80 macro assembler, a debug monitor and disassembler, 'disc-nurse' and a file management program.

Pyradev will cost £29.95 and should be available soon.

ZX Microfair beats the cold

DESPITE the cold and rain, people still crowded into the Royal Horticultural Hall for the 18th ZX Microfair last Saturday.

The day's main attractions included special discounts on the Spectrum Plus (£97.50), QL (£159.95), flat screen TV (£71.95) and software from Sinclair, but the largest crowds gathered round Cheetah's stand, where an impressive day-long demonstration of its Specdrum drum kit for the Spectrum was taking place.

On the software side, MikroGen, CRL, Silversoft, Delta 4, Hi-Soft, and OCP (demonstrating *Art Studio*) all took stands. Two games being shown for the first time were Realtime's *Star Strike II*, using 3D *Elite*-style graphics, and *3D Slime*, one of the best QL games on display, from newcomers Datalink.

War on Want plans charity tape for spring release

A NEW charity tape is being planned by War on Want, the organisation which raises funds for the impoverished, particularly in the Third World.

War on Want has gained permission from Virgin to adapt its title *Now Games*, and the new compilation will be called *WOW Games*. Companies which have already agreed to donate titles to the tape are Ocean, Firebird, Virgin, Artic, Quicksilva and PSS.

"I'm hoping to get ten games in total, and I am still talking to software companies," said Toby Robinson of War on Want. "The idea is to charge £10 for a ten-game tape, and sell it on mail order to begin with. After a couple of months, we hope to start selling through the shops."

WOW Games will initially be available only for the Spectrum, but if demand proves high, Commodore and Amstrad versions may be developed. Of the £10 paid for the tape, around 50p will go to administrative costs, and about £9.50 to War on Want. Release date is planned for April.

Sideways Ram

Hardware *16K Ram Module* **Micro** BBC B **Price** £22 **Supplier** Colin Terrell, 7B Essex Gardens, Hornchurch, Essex RM11 3EH.

There are literally hundreds of Rom software packages for the BBC Unfortunately, the BBC computer is only provided with four sideways Rom sockets as standard. This has led to the development of Rom expansion boards, which allow the user to hold 16 Roms in the computer simultaneously Despite this, the more affluent of you will still find that you possess more Roms than sockets A solution to this problem is to purchase a sideways Ram unit, an inexpensive example of which has just been released by Colin Terrell

The advantage of sideways Ram is that it can be written to You can leave your most frequently used Roms in the machine and save the contents of your others as files on a disc. These Roms can then be removed from the computer, freeing several sockets Whenever you wish to use the facilities provided by one of these Roms, you merely load the Rom image from disc into your sideways Ram module It can than be used as if the Rom were present in the machine Gone are the days when you had to lever Roms in and out of the machine every five minutes

```
RAM module

L – LOAD RAM
S – SAVE ROM
P – PROTECT RAM
V – VIEW ROMS
* – OS COMMAND
Q – QUIT
Select option
```

Colin Terrell's 16K Ram module is the same length and width as a Rom but is slightly more than twice as deep Fitting the device is simplicity itself, the module sits in any available sideways Rom socket Next you connect a probe clip to pin 24 of IC73 Finally you fasten the write protect switch to the rear of the machine If any of this sounds at all off putting, don't worry, because a clear and concise set of fitting instructions is provided, and you needn't go anywhere near a soldering iron.

```
LOAD RAM

Which socket to LOAD 0-15 : 1

Set switch to   "DOWN"   position

then enter ROM filename : FORTH
```

The software is provided on disc, with the program a combination of Basic and assembly language Should you wish to make any modifications to the program then you should encounter no problems as it is beautifully documented

The software is menu driven and provides most of the utilities that you will require It will display a list of the socket numbers and the Roms which they contain Knowing the socket number of a particular Rom you can then save a copy of that Rom to disc The next option will reverse this process and load a disc file into Ram This is always performed with the write protect switch in the "write" position. You are provided with a protect option to prompt you to flick the switch to its "protect" position and then press the *Break* key

Some Roms try to corrupt themselves by writing to memory locations above &8000 This would not affect a Rom but would overwrite the contents of your sideways Ram.

Although only one or two routines are provided with Colin Terrell's unit, they are the most commonly used. The 16K Ram module is easy to fit, easy to use, and cheap, which seems recommendation enough.

Jon Revis

```
SAVE ROM

Which socket to SAVE 0-15 : 3

Enter ROM size  A=8k B=16k : B

Enter ROM filename : TOOLKIT
```

2-Way Sharer

Hardware *Micro Peripherals 2-way printer/computer sharer* **Micro** Any with parallel interface **Price** £22 **Supplier** Akhter Computer Group, Akhter House, Perry Road, Staple Tye, Harlow, Essex CM18 7PN

This device is simply a small BBC micro coloured box with three Centronics-type parallel printer connectors on the back and a two way changeover switch on the front The box contains no active electronics, just a lot of wiring!

The manufacturer claims that it can either be used to connect one computer to either of two printers or to allow two computers to share access to the one printer As you might expect it is not possible to connect all three devices at the same time

In use, you run your normal printer lead from the computer to the box and then run a cable with a 36-way Centronics-type plug at both ends from the box to the printer – you'll probably have to make up your own as I did. I used 26-way insulation-displacement cable (IDC) and connectors obtained from Maplin Electronic Supplies This requires no soldering

At £22 (plus carriage) this device is much cheaper, though simpler, than other such devices It gives you a choice of whether to have two printers or two computers, depending on your requirements, since it contains no active electronics Its disadvantage is that it may only be connected to two devices, not that this would bother most home users! I have been using the device to allow my QL to have access to an FX80 and LTR1 printer without having to replug everything all the time

It has performed faultlessly for several weeks, and has become one of those things I now wonder how I ever managed without.

Dilwyn Jones

Name: Steven Crow
Bubble Bus programmer

I got into programming at school (Tunbridge Wells Grammar), about five years ago, where I took up computer studies. The school had Research Machines, mainly 380Zs, which, though limited in memory, were quite adequate for those days. After that I really got interested and bought a ZX 81 on which I learned programming.

Soon after, of course, the Spectrum came out and I bought that. It was pretty easy to adapt to the Spectrum, and I was soon writing Basic games, although they weren't all that good.

I soon learnt machine code as a natural progression and programmed my first commercial game, which was *Factory Breakout*.

With my next game, *Wizards Lair*, I approached Bubble Bus, who were based locally. It was accepted on the spot and I've been with the company every since.

I now develop my games on an Einstein, which I download all the code, through the old RS232 into the Spectrum. But I create all my graphics on the Spectrum, using a pencil and lots of plotting paper.

My games are usually converted to other machines, and I hope to convert *Starquake* for the new Sinclair 128. The game will just take advantage of the larger memory and the sound, as really the machine is just a Spectrum with larger memory.

I have an enormous admiration for Ultimate which has done a lot for the Spectrum, and really my programs are a compliment to theirs, but my next game will be a bit more original.

My favourite computer game is *Knight Lore*, because it was unique, and has fantastic humour.

The greatest thing I've ever achieved in my programming is getting people to like the games I make! At the moment I am happy where I am, but in the future I hope to develop software so that it has more depth, and a greater adventuring role.

Name: Steven Crow

Age: 20

Favourite Programs:
Missile Command, *Defender*, *Knight Lore*. I like *Missile Command* because of the quick reactions that you need to play the game.

Favourite Machines:
The Spectrum, but these new spate of machines such as the Atari ST and Amiga look astounding. For entertainment, I'd go for the Spectrum, and best all round porposes would go to the Amstrad 6128.

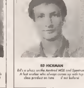
Softography:
Factory Breakout, *Wizards Lair*, *Starquake*.

Hobbies:
I like cycling a lot, and swimming, but I don't really have much time. I suppose you could say that I enjoy my work and treat it as a hobby.

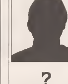
COULD YOU BE THE NEXT IN LINE FOR SUCCESS?

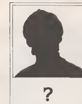


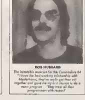
DAVID JONES
A wild imagination and more than a little eccentricity have enabled David to create such games as FINDERS KEEPERS and the brilliant SPELLBOUND!



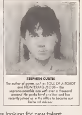
ED HICKMAN
Ed's a whizz on the Amstrad MSX and Spectrum. A fast worker who always comes up with top class product on time — if not before!







ROB HUBBARD
The inimitable musician for the Commodore 64. "I have the best working relationship with Mastertronic, they've really got their act together and gave me my first chance to do a music program. They treat all their programmers with respect"



STEPHEN CURTIS
The author of games such as SOUL OF A ROBOT and NONTERRAQUEOUS – the unpronounceable one with over a thousand screens! He works hard and fast and has recently joined us in the office to become our Technical Advisor

Mastertronic, the UK's leading computer games company, is looking for new talent.

We're searching for people who are not just experienced machine code operators but world-class programmers as well.

Who can join our highly creative and innovative team.

People who aim to be the latest on a distinguished list of highly acclaimed, highly paid Mastertronic programme creators – originating games that will be sold through our worldwide distribution network to no less than 18 countries.

If you think you can meet the challenge, contact us now for more details.

You could become the Mastertronic success story of 1986.

Write to Head of Programming
Mastertronic Ltd 8-10 Paul Street London EC2A 4JH

MASTERTRONIC

Power to the chip

David Lawrence and **Mark England** *step out from the software to look at the implications of the ST's 68000 chip*

Much of the power of the ST resides in the Motorola MC68000 processor chip which has fast become almost an industry standard for the new generation of super-micros. Part of the reason for this, as with every successful chip, is one of fashion.

There is no doubt that the 68000 has become the fashionable chip of the current generation. Perhaps years from now, programmers will look back and wonder why it has kept its hold so long, just as processors like the 6502 have lingered far beyond a decent burial date. For the moment, however, the 68000 is not only a fashionable chip, it is a logical choice for anyone wanting to produce a machine that packs sheer power.

A properly developed 68000 system has sufficient power to be favourably compared with many systems which, in the late 1970s, would have been referred to as "mini-computers". The comparison is a revealing one because in many ways the 68000 was designed specifically to duplicate such systems on a single chip. A typical mini computer system in, for instance, an office environment, would have consisted of a central processor unit and a small number of terminals, each of them capable of running programs separately at the same time.

Each user of one of the normal terminals would have had a password which gave them limited access to the system. In use the central processor would have allocated time to each user, depending on their priority and the number of people using the system, giving each one's programs a certain percentage of its time – though the speed would be such that they would be unaware that it was concentrating on other users.

Multi-user systems

One terminal, however, would have been defined as that of the supervisor and from this terminal it would be possible to take complete control of the system defining who could do what, allocating memory to one user and not to another, deleting material at will.

So how is this like the 68000? The answer to that is that the 68000 is itself designed to make multi-user systems possible with a single chip. Like almost any chip which is a) fast enough, b) can access enough memory, c) is capable of recognising enough special states which need immediate attention (interrupts or "exceptions" in 68000 parlance), the 68000 can be used to execute several different programs, each performing different tasks, all at the same time.

The 68000 has in addition, however, two different modes, user mode and supervisor mode. Most programs are executed in user mode and in this mode the program has only limited access to the chip. Supervisor mode gives much fuller access to the chip and a system can be constructed around a single 68000 with several users and a supervisor with overall control.

Even on a single user ST, certain areas of memory can only be accessed in supervisor mode, thus protecting the system from corruption by the software which is currently being run. In addition, programs in 68000 code are always written in what is called "position independent" form, which means that a program can be loaded anywhere in the available memory and can be expected to work – even if another program is located somewhere else.

How does this relate to the individual user of an ST? In fact it is more important than might be thought, since the ST is always multi-tasking, even though it might not be obvious to an observer. The desk accessories – little extras like the calculator and snapshot facility – are in fact constantly being run. In most cases this is only to find out whether the user is trying to access one of them – which is why they can be run during the course of any properly set up Gem program.

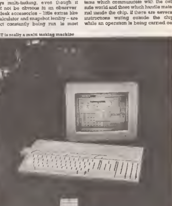
Quite apart from this, the sheer complexity of the Gem system is such that even within itself, it is constantly running a variety of parallel tasks. And perhaps the most important factor is that even if the user is never really aware of the many different levels at which the system is working, is still extremely fast.

Increase in power

The speed of the ST is based on several factors. The most important of them is that unlike the 8-bit chips like the Z80 or the 6502, on which most previous inexpensive micros were based, the 68000 sends out and receives data to be worked on in chunks of 16 bits. One of the major limitations on the speed of a chip is the rate at which data can come in and go out, so doubling the number of bits which can be handled simultaneously leads to a multiplication in speed.

This is not the only way that the chip cuts down the log-jam of communication. As compared to most other CPUs, the 68000 saves time by separating the systems which communicate with the outside world and those which handle material inside the chip. If there are several instructions waiting outside the chip while an operation is being carried out

The ST is really a multi tasking machine



within it, the input/output system allows up to two instructions into the chip which are stacked up ready for immediate use when the main part of the processor is ready for more

Once inside the chip, data is handled at a faster rate than on previous mass-production chips. Chips like the Z80 are capable of carrying out four million of their most basic operations every second, while the 68000 can run at a rate of more than eight million cycles every second.

The differences do not end there, however. The 68000 is not simply a 16-bit chip, it is described as a 16/32-bit chip. The reason for this is that while the 68000 communicates with the outside world in "words" of 16 bits, inside the chip it works with values of up to 32 bits. What this means is that far less manipulation needs to be carried out when working on values which may be too big to be fitted into the 8-bit registers of a 6502. Where the 6502 may need to be fed an item in four separate steps, the 68000 can handle it whole

The 68000 possesses no less than 17 internal storage locations, though only 16 can be used at any one time, eight for data and nine for addresses (eight at any one time). This again represents not merely an increase in power but a saving in time, since many operations which require several values can be carried out instantaneously rather than having to bring material in from storage places in external memory.

It's not limited to speed, however. It scores massively over most other chips in being able to recognise a full 256 different "exceptions" or "interrupts" as they are normally known. These are demands for action which override the normal execution of a program while a pressing task is carried out. Some tasks such as accepting information from a disc drive which require regular incrementing of a value somewhere, simply must be carried out immediately if they are to be of any value

An urgent task

Every useful chip must be able to recognise when it is being asked to carry out such an urgent function, be able to suspend the execution of the current program and then find the instructions for the urgent task. A chip like the popular 6502 can recognise only three different interrupts and so when an interrupt is requested the chip has to survey the whole of the system asking individual devices if they need attention. The 68000, placed in charge of a system of normal complexity, will have no difficulty in identifying exactly where the request has come from.

The final way in which the 68000 scores over the host of less able chips is in the amount of memory it is capable of addressing. Having described the 68000 as a 16/32 bit chip, the description has to be slightly modified since the address bus, the channel of communication through which the chip specifies the memory address it wishes to access is 24 bits wide allowing the 68000 to access 16,777,216 bytes of memory compared to the 65 536 of a normal 8-bit chip. The 512K of memory of the standard ST system is only a small fraction of the 68000's potential

The penalty for all this power is that the 68000 is relatively complex to program compared to a simpler chip like the 6502, or even the Z80. Perhaps it would be better to say that it is cumbersome, since while the individual instructions the chip can act upon are quite simple there are 57,341 of them

The sheer speed of the 68000 means, however, that most programming on new machines like the ST is being done in slightly slower but more amenable languages such as the current favourite, C.

None of this sophistication, of course, makes any difference to the way an individual user interacts with the ST, but perhaps it might increase their satisfaction to know how many computer professionals, a few years ago, could only dream of possessing the power that the 68000 places at their fingertips.

Tense time

Program *Quake Minus 1* **Micro** Spectrum **Price** £8.95 **Supplier** Beyond, Wellington House, St Martin's Lane, London.

From the moment the stunning title page bursts onto the screen complete with suitably tense soundtrack, it's atmosphere all the way with this race against time, rogue computers, automated mobiles and an ultimate earthquake.

Mike (*Lords of Midnight*) Singleton, with Warren Foulkes has created a game which is unique and oozes class and professionalism.

The scenario concerns a terror organisation called the Robot Liberation Front who have sabotaged a huge power station under the Atlantic ocean run by computers. If the R.L.F. succeed the reprogrammed computers will destroy the world. Government scientists have managed to salvage one computer – called Hermes. Your mission is to capture or destroy the remaining four, inside ten hours.

The whole game is played by joystick using icons for commands. It is worth just playing around and getting killed quite often just to work-out the screen layout which is very complicated – there's so much to look at. You are in command of a mobile, controlled via Hermes, and see the complex in 3D through the view screen. The mobile travels through the complex shooting renegade mobiles controlled by the sabotaged computers. Unfortunately they shoot back and you will find yourself failing many times before achieving anything.

Explosions are nicely animated, in fact, the graphics are very impressive throughout. I particularly enjoyed the scrolling effect as I travelled along the road which definitely achieved a feeling of speed and urgency. Will I save the world? Only time will tell – now let me call up the map and try to avoid getting ambushed again.

Andy Moss

Deep rift

Program *Koronis Rift* **Micro** Commodore 64 **Price** £9.95 **Supplier** Activision, 15 Harley House, Marylebone Rd, London NW1

This is the third Lucas film release following hot on the heels of *Rescue on Fractulus* and *Ballblazer* and it's the best one so far. Using the same fractal graphic techniques *Rift* places you in the pilot's seat of your scoutcraft in the guise of a Techno Scavenger (a sort of interstellar *Steptoe and Son*).

There you are travelling through empty space when your systems pick up a planet cut by deep rifts. Could this be the legendary planet Koronis? – fabled dream of Techno Scavengers throughout the Universe – the place where the most sought after weapon systems are hidden? Well, of course it is, so with the help of your beautifully animated science droid Psytek you descend to the surface and begin to explore the 20 mountainous rifts hoping to loot the many abandoned hulks found there of their treasures.

The 3D view from your scoutcraft is tremendously effective giving a real sense of a desolate landscape, although the sound is nothing much to speak of. After finding a few hulks and looting them and zapping guardian saucers which are hell bent on destroying you, it's back up to the ship for Psytek to give your finds a quick once over – these can then be either dismantled for sale later or installed in your craft to improve your weapon systems.

Your final objective (to claim the planet) is to destroy the guardian saucer base in Rift 20. Not an easy task, and one which requires you to have more sophisticated weapons than you start with.

An excellent game, although a word of warning – in the cassette version each rift has to be loaded separately, as does each visit to your ship so a great deal of toing and froing is required.

Andy Moss

True champ

Program *Barry McGuigan World Championship Boxing* **Micro** Spectrum **Price** £9.95 **Supplier** Activision UK, 15 Harley House, Marylebone Road, London NW1 5HE

The changing room was grim. The old 'pugs' were discussing the new contender. The best had all been of a style – an over the head view of animated boxers slugging the guts out of each other. But now Barry McGuigan had arrived.

Activision has rejuvenated the boxing game by eradicating the repetition. A near role-playing aspect has been added as you customise your champ and train him to his peak. Training is a question of allocating the time until the next bout, to either work on weak spots or compensate for them.

The day of the fight and the action is seen sideways on. Both boxers' footwork is governed by the style chosen, but your joystick governs the punches. Whether Fire is pushed or not controls the length of the blow. After a few knockouts you'll climb the table to eventually fight McGuigan himself.

This is far more involving than previous boxing games because it contains more and hasn't sacrificed animation. My only grumble is the absence of a *Save Boxer* option which really should have been included.

But there is a two player game and the menus are so simple to use.

John Minson

Air bourne

Program *Knight Flight* **Micro** QL **Price** £14.95 **Supplier** Realtime Software.

Realtime Software have just written an arcade game (strangely similar to the classic *Joust*) and jolly good it is too.

You play the part of a Gladiator, who flies on the back of an ostrich, and other gladiators try to knock you off your mount. In retaliation you knock them off their ostriches and try to capture them before another ostrich can pick them up.

The ostrich has to do a great deal of flapping to become airborne. The task of flapping means a lot of tapping madly at the space bar. The game has an excellent 2 player option – with both players on-screen.

Matthew Palmer

Basic base

Program *Ultrabase* **Micro** Any Amstrad CPC **Price** £14 95 Tape £17 95 Disc **Supplier** Beebugsoft, PO Box 50, St Albans, Herts

Despite their revered status amongst BBC owners and very high quality releases for that machine, Beebugsoft have come up with a remarkably average and unexciting database for the Amstrad. It's quite a workmanlike program and easy to use and I daresay that many people will appreciate it purely on that basis, however, if your requirements are ambitious or sophisticated you would do well to look elsewhere

It is a fixed field database, before entering data you have to specify how much room to allocate for each particular category which can be either restrictive or wasteful on memory space

There is a limit of 25 characters maximum for each field and of 2000 data items, eg, 200 records of 10 fields, 100 records of 20 fields, etc

Screen output is in a rigid and predefined form and although printer width can be altered and labels produced, there is no real formatting or report generating options.

Still, if your requirements do not exceed these features, then you will find it able to perform all the necessary functions of a database, sort in order, search the file for given entries – including strings held anywhere within a given field, display and edit selected fields

Tony Kendle

Romebo

Program *Gladiator* **Micro** Spectrum **Price** £7 95 **Supplier** Domark, 204 Worple Road, London SW20 8PN

Glad to be a gladiator? Well, it's your only chance of winning your freedom from slavery so strap on the armour, grab a sword and get down into the arena where the emperor will decide your fate

Yet again, Domark are going for the bloody and fans of the company will be glad to know that despite the much improved graphics on this one, they've managed to match their previous standards as far as play goes

It's 55 AD – which means you've overslept – and you control a little figure in a battle for life and death. The animation of the sprite is impressive and if you follow the instructions and go to the gambling mode to watch a demo bout you'd probably have the blood lust upon you.

There's a good choice of weapons to select first, but providing you don't do something silly, like taking two shields, I'm not sure your choice makes so much difference It's during practice that you're likely to realise that controlling your *Ram*-based Roman is less than easy

Into the arena and the computer controls the champions. During your brief life you'll realise just what a great idea it was to have so many moves and just what a hopeless one it was to access a third of them with two presses on the fire button, meaning time and time again an attempt to throw a weapon will result in its one press equivalent – move back, leg defence And think how you'll laugh when you mean to attack that psychopath's legs and instead swap your shield into your sword hand!

There's a minimum of 14 fights before you meet the emperor's champion and then you have to gamble on following bouts until you raise the ante to buy your freedom. Frankly, I think I'll return to mucking out the imperial dung heap

John Minson

Time saver?

Program *JOSS* **Micro** QL **Price** £15 **Supplier** WD Software, Hilltop, St Mary, Jersey, C.I.

JOSS (an acronym for Joystick Operated Software System) is claimed to be a time-saving utility which allows various options such as loading and running programs, copying and deleting files, and formatting new media, to be selected via a joystick or the arrow keys in conjunction with the fire-button or space bar

The program loads and runs automatically when the machine is booted, and displays a rather cluttered screen divided into about 10 regions, differentiated by colour The first 18 file names are displayed in a large window on the left of the screen, with a blinking arrow pointing at the topmost file name

A blinking cross-shaped cursor then has to be moved to a region of the screen containing "pointer down up", to move the pointer up or down with the space key I found this use of both a pointer and a cursor somewhat confusing

JOSS is obviously compiled, and on examination, I discovered it had first been written in SuperBASIC

When I tried to load an EXECable file, I was dumped out of the program, and a similar thing happened if the cursor was placed over "Do current option", and the space bar pressed. Better error-trapping is needed. Several SuperBASIC utility programs are provided. These are amateurishly coded, with little error-trapping

I don't really see the need for this package Simple menu-driven programs, which are just as fast and easier to use, could probably be written by most users themselves

Leon Heller

War!

Program *The War Game* **Micro** Spectrum **Price** £7.95 **Supplier** Realas Games, 24B Cowbridge Road, Pontyclun, Mid Glamorgan.

The War Game is set in the Horse-and-Musket period of warfare, that is the 17-19th centuries It can be played solo against the computer, or against a human opponent

In the solo version, several choices have to be made to start with the number of enemy units can be decided as well as their morale (thus affecting their performance in the coming battle) and the terrain that the armies will meet on – plain, rivers or forest.

Now the player places his HQ and forces on the map Under his command is an army consisting of infantry, cavalry, artillery and engineer units The enemy (or computer in this case) has a similar army, but more of everything, unfortunately! The aim of each side is to capture the enemy HQ.

The two-player version is a little more complicated, as neither player can see the initial deployment of the other (as long as you are good and turn away while the deployment takes place!) In either version, the decision to attack the enemy displays a window at the bottom of the screen with the opposing forces depicted as little stickmen: once the skirmish is entered, you can sit back while cannonball and shot fly back and forth

The War Game is certainly no simulation of a real event, and certainly no war game in the traditional sense witness the total destruction of retreating units One of the major drawbacks has to be the fact that forces cannot attack if on a diagonal.

Despite several inconsistencies in both manual and program (the computer's forces can sometimes get confused and oscillate between two buildings ad *infinitum* while you creep on), I spent many a long hour at it

Tony Bridge



UNDER PRESSURE

By N Outram

In this deceptively simple game for the Spectrum, you, the 'Atom Man' have to escape from a stoppered flask. You do this by pushing against the stopper from inside the flask. Nasty Doctor X – who shrunk you in the first place, has put you under pressure by introducing hydrogen molecules into the flask

Unfortunately for you, because of your size and frailty, if you are hit by anything or touch anything apart from the stopper you are instantly killed. Every so often the doctor drops specks of dust into the flask just to make it harder

The game has four levels and five pressures per level, the molecules are moved by a machine code program to speed things up Your man is moved using the following keys, Z – left, X – right, Q – Up, A – Down

These can be altered by changing lines 60 to 70 if required.

You might like to try altering the graphics for the molecules, these 16 bytes are held at line 1000. The 'Atom Man' bytes and dust bytes are held at line 1010.

Program notes

40-180	Main loop This is at the beginning of the program to speed things up
200-280	Death routine, jumps to restart game at 1100.
400-480	Escaped routine, includes Mad Molecules, update score, level and pressure
500-600	Machine code data and storer routine
1000-1630	Data for characters and screens also includes set up screen routine
1700-1770	This routine sets up the data for each molecule for use by machine code routine at 31000

Variables

(x,y)	Your x and y print position indicators.
Sc	Your score.
P	The pressure (in molecules per square flask!)
F	Level number (1-4)
S	Sound on/off indicator, O=Off, 1=On

```
 10 GO TO 4000 REM N O 65
 40 PRINT AT y,x; INK 2;" "
 50 IF SCREEN$ (y,x)<>" " THEN GO TO 2
00
 60 LET x=x+(INKEY$="x")-(INKEY$="z")
 70 LET y=y+(INKEY$="a")-(INKEY$="q")
 80 PRINT AT y,x; INK 2;" "
 90 IF INKEY$="s" THEN LET s=NOT s
 95 LET k=USR 31000
 96 IF s=1 AND PEEK (31499)<>0 THEN BE
EP .02,12
 100 IF RND>.99 THEN PRINT INK 2;AT 3+
RND*14,3+RND*23;" ": BEEP .1,-20
 180 GO TO 40
 200 IF x=28 AND (y=9 OR y=10) THEN GO
TO 400
 210 FOR k=0 TO 7 STEP .25
 220 PRINT AT y,x; INK k;" "
 230 BEEP .05,k*4: NEXT k
 240 PRINT AT 20,6; OVER 0; FLASH 1; BRI
GHT 1;k$
 250 PRINT AT 0,0; FLASH 1; HIT ANY KEY
FOR REPLAY ATOM MAN"
 255 IF INKEY$="" THEN GO TO 255
 260 RESTORE 1040: GO TO 1100
 400 PRINT AT 6,8; FLASH 1; BRIGHT 1;"MA
D MOLECULES "
 410 FOR k=1 TO 300-(10*p)
 420 RANDOMIZE USR 31000
 430 NEXT k: LET f=f+1
 440 IF f=5 THEN LET f=1: RESTORE 1040:
LET p=p+4*(p<17)
 450 LET sc=sc+5*f*p: GO TO 1500
 500 DATA 221,33,12,123,221,54,255,0,221
,70,0,221,35,197,205,53
 505 DATA 121,193,221,35,221,35,221,35,2
21,35,16,239,201,221,203
 510 DATA 4,126,32,15,221,126,4,61,40,4,
221,119,4,201,221,203,4
 515 DATA 254,201,221,203,4,86,40,3,208,
221,121,221,203,4,214,221
 520 DATA 126,4,238,1,221,119,4,221,126,
0,221,134,2,221,119,0
 525 DATA 221,126,1,221,134,3,221,119,1,
221,126,0,254,232,48,11
 530 DATA 221,126,1,254,168,48,4,254,24,
48,4,221,54,0,192,221
 535 DATA 54,1,163,221,203,4,142,205,223
,121,221,203,4,78,200,62
 540 DATA 1,56,11,123,221,110,1,203,61,2
03,61,203,61,62,23,147
 545 DATA 111,221,94,0,203,59,203,59,203
,59,22,88,58,0,0,8,41,16
 550 DATA 253,25,126,254,40,40,12,254,41
,40,17,221,126,2,237,68
 555 DATA 221,119,2,221,126,3,237,68,221
,119,3,201,221,126,2,237
 560 DATA 68,221,119,2,201,42,123,92,17,
8,0,221,203,4,70,40,1,25
 565 DATA 221,78,0,221,70,1,229,88,197,2
00,170,34,32,13,122,178
 570 DATA 119,162,186,40,45,221,203,4,20
6,24,39,79,71,122,203,63
 575 DATA 16,252,71,174,119,160,184,40,4
,221,203,4,206,121,61
 580 DATA 230,7,203,34,61,32,251,122,35,
174,119,162,188,40,4,221
 590 DATA 203,4,206,193,225,5,35,29,194,
242,121,201
 600 RESTORE : FOR k=31000 TO 31258: REA
D a: POKE k,a: NEXT k
 1000 DATA 0,0,102,233,255,102,0,0,24,60,
60,24,24,60,60,24
 1010 DATA 28,28,72,62,29,62,34,34,73,42,
0,107,0,42,73,0
 1040 DATA 4,0,92,80,1,64,6,0,108,108,1,2
4,0
 1050 DATA 6,0,84,68,1,0,56,0,124,78,1,0,
60,0,168,84,1,0,24
 1060 LET s=1: DATA 8,0,44,84,1,0,56,1,11
2,0,0,84,188,1,0,88,1,56,0,0,148,116,1,
56,0
 1070 DATA 10,6,52,68,1,0,56,0,84,52,1,6,
24,1,96,0,1,0,-16,0,76,140,1,0,24,1,104
,0,1,0,16
 1080 FOR k=USR " " TO USR " "+31
 1090 READ a: POKE k,a: NEXT k
 1100 LET p=4: LET sc=0: LET f=1
 1500 BORDER 0: PAPER 5: INK 0: OVER 1: C
LS
 1502 PLOT 7,24: DRAW INK 1;0,136: DRAW
224,0: DRAW INK 1;0,-136: DRAW -224,0
 1510 LET x=3: LET y=9
 1520 READ a: FOR k=1 TO a
 1530 READ a,b,c: INK 0
 1540 IF c<>0 THEN INK 1
 1550 IF NOT a THEN PLOT b,c
 1560 IF a THEN DRAW b,c
 1570 BEEP .1,k*2: NEXT k
 1580 PRINT AT y,x;" "
 1600 PRINT INK 2;AT 8,29;" ";AT 11,29;
" "; OVER 0;AT 9,28;"  ";AT 10,28;"
 "
 1610 PRINT INK 3;AT 20,0;"SCORE:";sc
 1620 PRINT INK 2;AT 21,0;"PRESSURE:": P
LOT 72,3: DRAW 8*p,0
 1630 PRINT AT 20,20;"LEVEL:";f
 1700 FOR k=1 TO p
 1710 LET a=31501+5*(k-1)
 1720 POKE a,RND*120+80: POKE a+1,RND*120
+32
 1730 POKE a+4,k*5: BEEP .02,k
 1740 POKE a+2,INT (RND*7)-3
 1750 POKE a+3,INT (RND*7)-3
 1760 IF PEEK (a+2)=PEEK (a+3)=0 THEN GO
TO 1750
 1770 NEXT k: POKE 31500,p
 1780 GO TO 40
```

COMPUTER GRAPHICS DESIGNER

We have an immediate requirement for a graphics designer with artistic flair and a strong interest in home computers. Responsibilities will include the support of a range of projects, designing both static and dynamic graphics of high quality. Applicants should be able to demonstrate a good understanding of graphics design, with a portfolio of previous work if possible.

PROGRAMMERS

Several vacancies exist for proficient machine code programmers with an extensive knowledge of Z80, 6502 & 68000 assembly language experience. A knowledge of C would be an advantage. Applicants should hold qualifications of HNC or degree level or have equivalent experience. Creative talent, self-motivation, and a strong interest in home computers are essential.

We offer highly competitive salaries, according to experience. Excellent working conditions.



Please send c.v. to -
For the attention of Dave Marshall
DIGITAL INTEGRATION LTD
Watchmoor Trade Centre
Watchmoor Road
Camberley, Surrey, GU15 3AJ
Tel. 0276 684959

GOOD BYTE

SPECTRUM

GAME	RRP	OUR PRICE
SUPERMAN	9.95	7.45
ENIGMA FORCE	9.95	8.50
SUPERBOWL	9.95	8.95
RAMBO	7.95	5.25
GUN FIGHT	9.95	6.95
SWORDS AND SORCERY	9.95	6.95
RUNESTONE	7.95	5.95
HOW GAMES II	9.95	6.90
SKYFOX	9.95	6.70
"V"	7.95	5.90
ROCK & WRESTLE	9.95	7.45
SWEEVO'S WORLD	7.95	5.95
WINTER SPORTS	9.95	6.95
ART STUDIO	14.95	11.95
EXPLODING FIST	9.95	6.90
HYPERSPORTS	7.95	5.95
TAU CETI	9.95	6.90
GYROSCOPE	7.95	5.95
TOMAHAWK	9.95	7.45
FRIDAY 13th	8.95	6.70
COSTA CAPERS	7.95	5.95
CYBERUN	9.95	7.95
COMMANDO	9.95	7.50
I C K U P	8.95	6.70
ELITE	14.95	10.25

COMMODORE

GAME	RRP	OUR PRICE
SUPERMAN	9.95	7.95
ENIGMA FORCE	9.95	7.90
QUAKE 1	9.95	7.45
BATTLE OF BRITAIN	9.95	8.95
BLADE RUNNER	8.95	6.95
ZORRO	9.95	6.95
DRAGON SKULLE	9.95	4.95
AD MUSIC SYSTEM (Disc)	39.95	29.95
WINTER GAMES	9.95	7.95
RACING DESTRUCTION (cassette)	12.95	8.70
BALL BLAZER	9.95	7.50
HAZARD CAPERS	9.95	7.45
REVS	14.95	9.95
SKYFOX (cassette)	9.95	7.50
CAUSES OF CHAOS	8.95	6.70
LORD OF THE RINGS	15.95	11.20

GAME	RRP	OUR PRICE
ROCK & WRESTLE	9.95	7.45
ELECTRAGLIDE	9.95	7.45
SUPERBOWL	9.95	6.95

AMSTRAD

GAME	RRP	OUR PRICE
SUPERMAN	9.95	7.45
STRANGE LOOP	8.95	6.50
STARION	8.95	4.95
ROCKO	8.95	4.50
ROBIN OF SHERWOOD	9.95	4.95
TALES OF ARABIAN KNIGHTS	7.95	4.95
WORM IN PARADISE	9.95	4.95
GEOFF CAPES	9.95	6.50
BOUNCES	9.95	7.95
SPY v SPY	9.95	7.95
ELITE	14.95	11.95
FAIRLIGHT	9.95	7.45
BORED OF THE RINGS	9.95	5.95
ZOIDS	8.95	6.70
SABATOUR	8.95	6.50
YIE AR KUNG FU	9.95	5.95
SUPERBOWL	9.95	6.95
COMP HITS 10 (Disc)	14.95	10.90
GRAPHIC ADV CREATOR (Disc)	22.95	16.90

QL

GAME	RRP	OUR PRICE
YIE AR KUNG FU	14.95	11.50
YIE AR KUNG FU II	14.95	11.00
HYPERRALLY	14.95	11.50
NIGHTSHADE	9.95	[illegible]
KNIGHT LORE	9.95	7.25
ALIEN 8	9.95	7.25

BBC

GAME	RRP	OUR PRICE
NIGHTSHADE	9.95	7.25
GOLDRUN	9.95	7.50
EXPLODING FIST	9.95	7.25
SPEECH	9.95	7.45
REPTON 2	9.95	7.45

SPECIAL OFFER QUICKSHOT II £5.50

COMP. PRO. JOYSTICK	18.95	14.95
KONIC SPEEDSTICK	12.95	9.90

Overseas orders please inc. 75p per tape
ALL PRICES INCLUDE P&P

PLEASE NOTE IF OUR ORDER EXCEEDS £50 YOU GET 10% FURTHER DISCOUNT
SEND CHEQUES/P.O. TO
GOODBYTE PCW8
UNIT 10-11, IMPERIAL STUDIOS,
IMPERIAL, LONDON SW6
(TEL. 01 731 4607)

D. S. Enterprises (01) 671 0209

Disks

5.25"	DS DD	DS QD
Unbranded	£12.60	£17.00
Maxell	£16.00	£20.00
3.5"		
Fuji	£25.75	£32.50
Maxell	£27.80	£35.00

All disks are guaranteed and come packed in plastic flip & file type boxes

Drives

QL, Spectrum or BBC Compatable

	Single 80 Track	Dual 80 Track
3.5"	£97.50	£165.00
5.25"	£100.00	£185.00

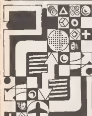
QL Software

Lattice C	£20.00
Pascal (Full ISO)	£87.50
Super Charger (Basic Compiler)	£48.60
Ram Disc (Ram Disk & Spooler)	£9.75
Cosmos	£12.95
Tasprint	£17.50
QDraw	£12.95
Toolkit II (Eprom version	£29.95
Ice	£44.95

Add on's

512k Expanderam (Miracle Systems)	£115.00
(Including Ram Disc	£122.50
Cumana Disc Interface	£77.90
Dual 3.5" Drive + Interface (Spectrum or QL)	£260.00
Zero 2 (Turtle QL, Spectrum & BBC)	£115.00

Special discounts on complete packages or large orders. Call for details of all QL or Spectrum needs on 01-671 0209. (All prices are inc P&P and VAT). Make all cheques payable to **David Storton, 25 Trinity Rise, London SW2 2QP.**



BASE CONVERSION

by Margaret Mair

On being asked repeatedly for advice by schoolchildren doing homework on numbers and base conversion, I decided (for *my* benefit) to write a program to facilitate checking the accuracy of the homework. Most conversions need to convert the number in the first base to that of base 10 and then convert the number in base 10 to that of the second base

This program works out the number in the new base in one pass. It, first of all, makes sure that the number entered is in decimal form because an entry is allowed to be made in hex notation. Two spaces in the string are allocated to each digit because numbers in a base greater than 10 will need two spaces for each digit For example, a number like 5205 in base 66 means that the first digit is 52 and the second one is 5

Successive division of the number held in the string by the second base takes place until that number is zero All the remainders are collected and this gives the answer

Because strings on the QL can be of great length the number to be converted and the number in the new base can be quite long Since two spaces are allowed for each digit then any base from two to 99 can be accommodated

The numbers entered must occupy two spaces for each digit of a number in a base greater than 10, but only one space for a base of 10 or less

```
100 REMark Conversion of a number from one base to anot
her
110 CLS
120 PRINT \,'Numbers to a base greater than 10 must be
entered"
130 PRINT ,"In a 2 digit form -"
140 PRINT \;"(e.g. 2(base 11) would be entered as 02"
150 PRINT TO 14;"10(base 12) as 10 or OA"
160 PRINT TO 14;"H8(base 18) as OH08) or 1716 or OH16"
170 PRINT \,,"otherwise as single digits"
180 INPUT \\"Number    - "; A$
190 INPUT "From base - "; BASE_A$
200 INPUT "To base   - "; BASE_B$
210 REMark ----------------------------------------
220 REMark Number entered correctly and within range?
230 REMark ----------------------------------------
240 IF BASE_A$ <2 OR BASE_A$ >99 OR BASE_B$ <2 OR BASE_
B$ >99
250 CLS: PRINT\"Base out of range - Re-enter":GO TO 180
260 END IF
270 IF BASE_A$ >10 AND LEN(A$) MOD 2 <>0
280 CLS : PRINT \ "Number entered wrongly - Re-enter":
GO TO 180
290 END IF
300 REMark ----------------------------------------
310 REMark Change number into pairs and decimalise
320 REMark ----------------------------------------
330 B$ = "": PRINT\\\,,"Calculating ''!"
340 IF BASE_A$ < 11 THEN
350  NU$ = ""
360  FOR N = 1 TO LEN(A$)
370   NU$ = NU$ & ("0") & (A$(N))
380  END FOR N
390 ELSE
400  NU$ = A$
410  FOR N = 1 TO LEN(A$) - 1 STEP 2
420   COD$ = ("0")&(CODE(A$(N))-48-7*(CODE(A$(N))>57))&
(CODE(A$(N+1))-48-7*(CODE(A$(N+1))>57))
430   NU$(N TO N+1) = COD$(LEN(COD$)-1 TO)
440  END FOR N
450 END IF
460 REMark ----------------------------------------
470 REMark Convert from first base to second base
480 REMark ----------------------------------------
490 REPeat LOOP
500  R = 0
510  FOR N = 1 TO LEN(NU$) - 1 STEP 2
520   NU = BASE_A$ * R + NU$(N TO N+1)
530   R = NU MOD BASE_B$
540   NU$(N TO N+1) = NU DIV BASE_B$
550  END FOR N
560  R$ = ("0") & (R)
570  B$ = R$(LEN(R$) -1 TO ) & B$
580  IF LEN(NU$) = 2 AND NU$ = 0: EXIT LOOP
590  IF NU$(1 TO 2) = 0: NU$ = NU$(3 TO )
600 END REPeat LOOP
610 REPeat LOOP
620  IF B$(1 TO 2) <> 0: EXIT LOOP
630  B$ = B$(3 TO): END IF
640 END REPeat LOOP
650 REMark ----------------------------------------
660 REMark Print out.
670 REMark ----------------------------------------
680 CLS: ST = BASE_A$ > 10
690 PRINT\"NUMBER:"\;" in base (";BASE_A$;")"; TO 13;CH
R$(189)'';
700 FOR N = 1 TO LEN(A$) - ST STEP 1 + ST
710  PRINT A$(N TO N+ST)';
720 END FOR N
730 PRINT\" in base (";BASE_B$;")";TO 15; CHR$(189)'';
740 ST = BASE_B$ > 10: J = BASE_B$ < 11
750 FOR N = 1 TO LEN(B$) - ST STEP 1+J+ST
760  PRINT B$(N+J TO N+J+ST)';
770 END FOR N
780 PRINT
790 IF BASE_B$ < 11 OR BASE_B$ > 35: STOP
800 PRINT "    OR";TO 15; CHR$(189)''';
810 FOR N = 1 TO LEN(B$) - ST STEP 1 + ST
820  PRINT CHR$(B$(N TO N+ST)+48+7*(B$(N TO N+ST)>9))';
830  IF ST = 1: PRINT " ";
840 END FOR N
850 PRINT
860 STOP
```



UNDER THE MORTUARY

by Sunil Jagota

This is a cartoonesque Arcade/Adventure game written for the BBC micro Model B (O S 1 2) in *Under The Mortuary* you must guide Sonny, the Bombay Duck who is trapped under a mortuary, to safety To do this Sonny has to overcome many of the hazards, traps and tests set for him and reach the exit, which is in the form of a door There are 28 different rooms to explore, and each one is infested with different opponents

Scattered about in the 28 rooms are collapsing walls, spiders, ghouls, chained fireballs, super ghouls, stakes, coffins, prickles, keys, bombs, mind shakers and of course the door! A tune constantly plays in the background. To play this game, you will have to find out how to use or avoid the various objects or opponents you encounter You will find that the stakes and the mind shakers will be used most often

It may take you some time to master the controls, they are = UP, / = DOWN, Z = LEFT, X = RIGHT It may be useful to make the bird stop motionless, to do this it has to collide with a wall.

This week we give you the two short programs that form the hex loader and game introduction respectively Firstly type in Fig 3, the instruction program, and *Save* it onto a BLANK tape Leave the tape positioned after Fig 3 Now type in Fig 1 – the hexadecimal loader and *Save* it. Next week we will begin to print the mammoth hex listing

If you don't feel like typing in the program, simply send me £4 and I will send it to you on tape. *Sunil Jagota, 69 Coutts Rd., Walkergate, Newcastle-upon-Tyne NE6 4RA*

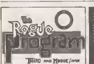
Figure 3 – Instruction Program

```
>LIST
   10 *FX200,3
   20 ONERRORGOTO300
   30 *FX210
   40 MODE7 VDU23,8202,0,0;0;0; *FX15
   50 *FX212,0
   60 *FX213,1
   70 *FX216,1
   80 VDU7 ENVELOPE1,140,0,0,0,0,0,0,126,126,0,-10,126,126 ENVELOPE2,12,-1,1,-1,
1,1,1,126,126,0,-10,126,126 ENVELOPE3,12,3,2,2,1,1,1,126,126,0,-10,126,126:ENVEL
OPE4,2,1,-1,1,1,1,1,30,30,0,-10,30,30 ENVELOPE5,1,-1,1,-1,1,1,1,30,30,0,-10,30,3
0
   90 PRINTCHR$129,CHR$141,SPC 8,"Under The Mortuary"'CHR$129CHR$141,SPC 8,"Unde
r The Mortuary"'CHR$133CHR$141,SPC 8,"@@@@@@@@@@@@@@@@@@"'CHR$129CHR$141,SPC 8,
"!!!!!!!!!!!!!!!!!!"'
  100 PRINT'CHR$141CHR$134"Do you want sound throughout the game"'CHR$141CHR$134
"Do you want sound throughout the game"''CHR$141SPC10CHR$134" Y or N ? CHR$132'C
HR$141SPC10CHR$134" Y   or N    ? CHR$132 REPEATA$=GET$ UNTILA$<>""
  110 IFA$<>"N" A$="Yes" ELSE A$="No
  120 VDU7 FORF=0TO1 PRINTTAB(22,8+F),A$, NEXTF PRINT'' IFA$="Yes" GOTO140 *FX15
  130 *FX210,1
  140 PROCpicture
  150 VDU26 FORF=18 TO 23 PRINTTAB(0,F)CHR$(111+F) NEXT VDU28,6,23,39,18 VDU30:P
RINTCHR$136"  Loading - Main Program
  160 *Run Prog
  180 DEFPROCpic(a%) RESTORE
  190 DATA32,32,&FF,&FF,&FF,&FF,53,0,118,112,122,&FF,&FF,&FF,112,112,62,0,&FF,&F
F,&FF,&FF,&FF,&FF,&FF,&FF,53,0,3,32,32,106,&FF,&FF,&FF,0,3,32,32,106,&FF,&FF,&FF
,0
  200 DATA32,32,32,&FF,&FF,53,0,32 32,32,&FF,&FF,53,0 32,32,32,106,&FF,0,32,32,3
2,106,&FF,0,32,32,32,34,55,0,32,32,32,32,53,1
  210 PRINT VDU13 FORspace%=0 TO a% VDU9 NEXTspace% VDU145,154 REPEAT READA IFA<
>0 VDUA
  220 UNTILA=0 OR A=1 IFA=0 GOTO210 ELSEPRINT' ENDPROC
  230 DEFPROCpicture FORF=1TO2000 NEXTF VDU28,0,23,39,4,12 *FX15
  240 PRINT" Help 'Sonny' the forgotten bombay duck  find his way out of U T M b
efore the    Phantom Organist drives him insane      You will find various objec
ts which can help Sonny free himself "
  250 PRINT" The objects which can help Sonny        include Stakes , Coffins ,
Mind Shakers Keys , and of course the Door!         Sonny can only carry one St
ake at a     time  "
  260 PRINT" The control keys are as follows  -      Z _ Left , X _ Right ,
           _ Up   , / _ Down      VDU7
  270 PRINT" P S  Some Walls may dissolve , and      lure you into fatal beings
, or objects While in some rooms , certain objects   have to be picked up in a c
ertain order to complete
  280 PRINT'CHR$136CHR$129 Press The Space-Bar To Continue >>>>". REPEATUNTILGET
=32 VDU7 A$="U   T   M    CLS PROCpic(0) VDU30 PROCpic(22) FORloop%=0 TO 17 FORF
=0TO6 PRINTTAB(12,F+3)CHR$(129+F)A$CHR$145
  290 A$=MID$(A$,2,LENA$)+MID$(A$,1,1) NEXTF NEXT VDU7.ENDPROC
  300 !&287=&8C0702
  310 CALLAD9CD
```

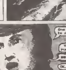
```
'Figure 1'  -  Hexadecimal Loader

 10 REM ****** Uoder The Mortuary ******
 20 REM Code Input Routine (FIG 1)
 30 REM ****** Under The Mortuary ******
 40 MODE 7
 50 *FX 229,1
 60 REPEAT  CLS  PRINT "Load (Y/N) ?",  A$=GET$  UNTILA$="Y" OR A$="N"  IF A$=
Y  THEN *Load Prog
 70 CLS
 80 INPUT "Start Address (Hex)" ,A$
 80 Start%=EVAL("&'+A$)
100 IF Start%>&5507 THEN 300
110 IF Start%<&3000 THEN  70
120 PRINT ~Start%   ,
130 INPUT   "B$ IF B$="SAVE  GOTO 320
140 INPUT  Checksum  ,C$ IF C$="SAVE  GOTO 320
150 IF LEN B$<>16 THEN PRINT Error !   GOTO 100
160 Flag%=0
170 FOR N=0 TO 7
180 X$=MID$(B$,2*N+1,1)  GOSUB 340 IF F%=1 THEN 260
190 X$=MID$(B$,2*N+2,1)  GOSUB 340 IF F%=1 THEN 280
200 B=EVAL( & +MID$(B$,2*N+1,2))  ?Start%=B  Start%=Start%+1  Flag%=Flag%+B
210 NEXT N
220 FORM=1 TO LEN C$
230 X$=MID$(C$,M,1)  GOSUB 340  IF F%=1 THEN Start%=Start%-1  GOTO 260
240 NEXT M
250 IF Flag%=EVAL( &'+C$) THEN 100
260 PRINT Error In Checksum !
270 Start%=Start%-8  GOTO 100
280 PRINT Typing Error !"
290 Start%=8*(Start% DIV 8)  GOTO 100
300 *TAPE
310 CLS  IF Start%>&5507 PRINT Code Completed, Phew, At Last!"'.*Save Prog 300
0+2508 2C35 C00
320 IF Start%<=&5507 PRINT'SAVE Prog  *SAVE  Prog' 3000+2508
330 PRINT  Code Saved'   END
340 F%=0 IF ASCX$<ASC 0  F%=1  RETURN
350 IF ASCX$<ASC    RETURN
360 IF ASCX$<ASC 7' F%=1  RETURN
370 IF ASCX$>ASC G' F%=1
380 RETURN
390 REM ****** Uoder The Mortuary ******
400 REM ****** Sunil Jagota  1985 ******
410 REM ****** Under The Mortuary ******
```

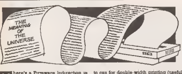
The Rogue Program











PRINTING MODES

by Glen Counsell

There's a Firmware Indirection in the Ram of the 464, which intercepts characters on their way to the printer. This allows you to use a machine code routine to take a look at the characters, as they speed by, and respond to particular ones by having them trigger another routine which use send new Escape sequences to the printer. This means, in effect, that you can cue your text to change the printing modes to use emphasised print, instead of normal, for example

I have written two short programs (one printed this week, the other next week), which make use of this trick. The first is designed for use when you are Listing a Basic program. It recognises a Rem statement in a line and prints anything that comes after the Rem in emphasised type. This means that your comments in a program show up clearly and help to make the program easily understandable. You can see how effective it can be if you look at the Basic program below, which was reproduced with the help of this utility

Program two (next week) allows you to can for double-width printing (useful for headings), or let you underline words, or sections of text. It can be used with the *Easi-Amsword* word-processing program, which is bundled with most 464s, as well as in other situations where you would want to output text to a printer.

The actual routines have to be in machine code, but I have put them into short Basic progams, which will enter the code into the computer's memory for you. Once you have done this, you can forget the Basic programs and Save each piece of machine code, by itself, for future use, with *Save 'Listmark',B,(your address),160* (this week) and *Save 'Printer',B,(your address),100*

One of the attractions of the routines is that you can Load them anywhere (well, anywhere sensible) in Ram. You put them in action – plug them in, as it were – by Calling the address you Loaded them to. Each routine checks to find the address at which it is located and then sets itself up accordingly. It is what is known as fully re-locatable. You 'unplug' the routines by Calling the address you Loaded to +2.

My printer uses Epson compatible codes and the ESC sequences have been chosen to fit it. Your printer may use different codes and you will want to check them in your instruction book. You may also want different kinds of type emphasis, which would require different codes. In this program, I have allowed space for five different codes this would let you use a combination of sequences – italic and underline, or condensed, or whatever

The only thing to remember is that you must have exactly five codes, or the program will crash. You must pad out with "0"s (as I have done), if you use less than five (lines 900-920)

I ought to point out a limitation in using the Rem program. To save space, I have not made the program check for context, when it finds a Rem. This means that if you use a word like "Remark" in your program – or even "FIREMAN" – funny things will happen! However, remember, "Remark" and "Fireman" (and even "remember") are perfectly OK

Next week, the printer and program.

```
10 REM *** Check code data ***
15 DIM chk(7)
20 RESTORE 1000:FOR j=0 TO 5
30 FOR i=1 TO 20:READ n$:chk(j)=chk(j)+V
AL("&"+n$):NEXT
40 NEXT
50 FOR i=1 TO 14:READ n$:chk(j)=chk(j)+V
AL("&"+n$):NEXT
60 FOR j=0 TO 6:READ n:IF n<>chk(j) THEN
 80
70 NEXT:PRINT"CODING CHECKS OK":GOTO 100
80 PRINT"ERROR IN LINE";1000+j
90 STOP
100 REM *** Place code in memory ***
110 PRINT"Space for 149 Bytes needed: Ha
ve you set HIMEM?":INPUT"Start address:"
;add
115 REM *** First the entry jumps & prin
ter codes ***
120 RESTORE 900:FOR j=0 TO 14:READ n:POK
E add+j,n:NEXT
130 REM *** Next the main code ***
140 FOR j=15 TO 148:READ n$:POKE add+j,V
AL("&"+n$):NEXT
150 PRINT"ROUTINE LOADED":PRINT"CALL",ad
d;"to set Routine":PRINT,add+2;"to canc
el"
160 END
800 REM *** Line 900:entry jump codes
810 REM *** Line 910: ESC codes for emph
asised print
820 REM *** Line 920: ESC codes for norm
al print
900 DATA 24,104,24,11
910 DATA 27,69,0,0,0
920 DATA 27,70,0,0,0
930 DATA 0
1000 DATA 21,F8,7,22,F2,0D,C9,E5,21,0,0,
FE,52,20,16,FE,45,28,14,C0
1001 DATA 86,FE,4D,28,18,C0,86,CB,9E,FE,
D,28,2F,E1,C3,F8,7,CB,C6,18
1002 DATA F9,CB,46,20,EC,CB,CE,18,F0,CB,
4E,24,E4,36,0,CB,DE,E1,CD,F6
1003 DATA 7,E5,21,0,0,6,5,7E,E3,C5,CD,F8
,7,C1,E3,23,10,F5,E1,C9
1004 DATA CB,5E,36,0,28,C0,21,0,0,1A,E6,
76,38,30,E1,E5,DD,E1,A7,1
1005 DATA 67,0,ED,42,DD,75,E3,DD,74,E4,1
,5,0,9,DD,75,F8,DD,74,FC
1006 DATA 9,DD,75,AD,DD,74,AE,E,9,9,22,F
2,BD,C9
1100 REM *** Checksum data ***
1110 DATA 2202,2665,3176,2432,2185,2729,
1728
```

INTERRUPT

by Eric Deghaye

Last week we saw how an interrupt could be used to control the consequences of pressing a key. This week we consider how to control the sound chip of the Commodore 64 with interrupts.

One of the gimmicks sometimes implemented on machines such as an IBM PC is a keyboard that makes a faint 'bleep' whenever a key is pressed. This can be useful if you want to 'hear' whenever a key has been correctly pressed.

Implementing such a feature on the Commodore 64, now that we know more about how the interrupts work, should not be too difficult.

Briefly, the Commodore has a purpose built sound chip that can be programmed by poking values into some memory locations. These correspond to the characteristics of the sound to be produced. Unlike a piano keyboard where the sound will gradually die away after a key has been pressed the chip in the Commodore has its sound channel either on or off. Which means that you have to switch it on and off yourself.

The following instructions are sound parameters for the sound chip – their meaning is described in the program listing. What we are doing here is to initialise the sound chip with the parameters of our sound.

Then comes the interrupt driven routine. What has to happen first is checking whether a key is currently being pressed. This is achieved by looking at the content of the memory location $C5. If we read a value of 64, this means that no key is currently pressed. Any other value is the ASCII of the key pressed. So if the value read is 64, we can exit the routine.

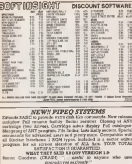
If the value is any different, the sound generation procedure is started.

The sound is switched on by putting the value 33 at the address base+4 (find out for yourself the reason for these values), then a delay is created with a countdown on the content of x, leaving the sound switched on finally followed by putting the value 32 in base+4 which switches the sound off. Control is then given back to the normal interrupt routine.

For a longer 'bleep' change the value loaded in x at Line 700. The bigger the value, the longer the bleep (because the longer the delay before the sound channel is switched off). You also might find it interesting to play with the sound chip parameters. Try, for example, to make a musical keyboard, ie, change the pitch of the sound produced according to the ASCII of the key pressed. The results are hilarious.

```
10 REM BASIC LISTING FOR INTERRUPT EXAMPPLE 3
20 :
30 :
40 INC=0
50 BASE =20480
60 READ A:IF A=-1 THEN SYS 20480
70 POKE BASE+INC,A
80 INC=INC+1: GOTO 60
90 :
95 :
100 DATA120,169,38,141,20,3,169,80,141,21,3,169,79,141,24,212,169,8,141,5
110 DATA212,169,17,141,6,212,169,255,141,0,212,169,255,141,1,212,88,96,165,197
120 DATA201,64,240,17,169,33,141,4,212,162,160,202,224,0,208,251,169,32,141,4
130 DATA212,76,49,234,255,255
140 DATA -1,-1
```

```
100 ;------------------------------------------
110 ;
120 ;     INTERUPT EXAMPLE 3
130 ;
140 ;------------------------------------------
150 ;
160 ;
170 IRQVECA    = $0314
180 IRQVECB    = $0315
190 RETPOINT   = $EA31
200 BASE       = $D400        ;ADDRESS OF THE SID CHIP
210 KEYPRESS   = $C5          ;CONTAINS THE VALUE OF CURRENT KEY
PRESSED
220 ;
230 ;
240 *=$5000
250 ;
260 ;------------------------------------------
270 ;      CHANGE THE VECTORS
280 ;------------------------------------------
290 ;
300            SEI
310            LDA #<ROUTINE
320            STA IRQVECA
330            LDA #>ROUTINE
340            STA IRQVECB
350 ;
360 ;
370 ;------------------------------------------
380 ;      INITIALISE THE SID CHIP
390 ;------------------------------------------
400            LDA £79                ;SET THE VOLUME
410            STA BASE+24
420 ;
430            LDA £8                 ;ATTACK/DECAY
440            STA BASE+5
450 ;
460            LDA £17                ;SUSTAIN/RELEASE
470            STA BASE+6
480 ;
490            LDA £255               ;FREQUENCY LOW
500            STA BASE
510 ;
520            LDA £255               ;FREQUENCY HIGH
530            STA BASE+1
540 ;
550            CLI                    ;FINISH THE SETUP
560            RTS                    ;RETURN
570 ;
580
590 ;
600 ;------------------------------------------
610 ;      THE MAIN ROUTINE
620 ;------------------------------------------
630 ;
640 ;
650 ROUTINE    LDA KEYPRESS           ;GET THE CURRENT KEY PRESSED
660            CMP £64                ;IS THERE NO KEY PRESSED??
670            BEQ EXIT               ;NONE THEN EXIT
680            LDA £33                ;SET THE GATE BIT
690            STA BASE+4             ;PLAY THE SOUND FROM HERE
700            LDX £160               ;WAIT A LITTLE
710 WAIT       DEX
720            CPX £0
730            BNE WAIT
740            LDA £32                ;AND CLEAR THE GATE BIT
750            STA BASE+4
760 EXIT       JMP RETPOINT           ;CARRY ON AS USUAL
```





ACCESS/VISA

☎(0392) 213355

MODEM HOUSE 70 Longbrook St Exeter Devon EX4 7AP Telex 42585 XONIA

commodore HORIZONS

Subscribe to **Commodore Horizons** for one year and receive your choice of Sunshine Book listed below, free of charge. Write with your name, address and choice of book enclosing your subscription fee of £10.00 (£16.00 overseas), to

CH subs 12-13 Little Newport Street, London WC2H 7PP

- Beginning Machine Code on the C64
- Commodore Disc Companion
- The Working Commodore C16

Evesham Micros

PRINTER OFFERS

Look at these deals on centronics printers we believe that these prices offer the best value in the country. All prices include receipted delivery, despatch is within 48hrs of receipt of order provided goods are in stock. A printer lead is supplied to suit your micro free of charge (please specify Amstrad, BBC, Oric, Dragon, Einstein, CBM64 or Memotech) for Spectrum or QL owners we will supply with an appropriate interface for an additional £20.00

SMITH CORONA FASTEXT 80

Bulk purchase allows us to offer this **high quality, 80 column dot matrix printer** for an unheard of price. Buy a proper printer for the price of a thermal. Friction feed is standard and an optional tractor unit is available

ONLY £129.95

Price includes lead to suit your micro.
Or to suit Spectrum with Kempston centronics 'E' interface £149.95

SHINWA/MICRO P CPA 80+
NOW WITH NEAR LETTER QUALITY MODE

New NLQ PICA print style
Standard PICA text (100cps)
True descenders on jpg etc.
ELITE mode gives 96 columns
CONDENSED mode gives 142 columns
ENLARGED mode
SUBSCRIPTS and SUPERSCRIPTS
underlines nicely
Good italic character set

We are convinced that this printer offers the best performance and value in its class and at our unheard of price is a BARGAIN

ONLY £189.95

Price includes Centronics lead to suit your micro.
Or to suit Spectrum with Kempston 'E' interface £209.95.

MICRO P MP165

This printer is a very high specification at an unbelievable price. It boasts 165 cps in draft mode and 70 cps in near letter quality mode which is switch or software selectable. It is friction and tractor feed as standard, has a 2K buffer and is EPSON compatible (it even uses an EPSON ribbon). It can print in standard PICA 80 column mode or a variety of others from enlarged 40 column mode to condensed at 132 column. Italics are available in all modes. Normally this printer would be expected to sell at £300 plus we are offering it at our ultra keen price inclusive of printer lead to suit BBC, Amstrad, CBM 64, Oric, Dragon, Einstein or Memotech

ONLY £249.00

Price includes Centronics lead to suit your micro.
Or to suit Spectrum with Kempston 'E' interface £269.00

COMMODORE OFFERS

COMMODORE 128D NOW IN STOCK, RING FOR PRICES

- CBM 1541 DRIVE
- CBM MPS801 PRINTER
- CBM 128
- CBM 128 with 1570 Disk Drive
- CBM 1701/2 Monitor
- CBM 1901 Monitor (for 128)
- CBM 1571 DISK DRIVE
- CBM Compatible DATA RECORDER

STAR SD10C

A superb new 120 cps Commodore ready printer that offers many features including friction and tractor feed, CBM graphics, near letter quality mode etc. Packaged ready to use at the special introductory price of

ONLY £249.00

All prices include P&P and VAT. Send cheque, Postal Order or Credit Card no. Credit Card orders accepted by phone. Callers welcome. Wide range of goods stocked. Trade enquiries welcome. European orders send price as advertised. Outside Europe £2.00 for airmail. Mail order to Evesham Shop please.

EVESHAM MICROS
BRIDGE STREET, EVESHAM, WORCS., WR11 4RY.
Tel: 0386 41989

MICRO CENTRE
1756 PERSHORE ROAD, COTTERIDGE, BIRMINGHAM.
Tel. 021-458 4564



Wicked traps

Tom Geldie of Airdrie has sent in a poke for those Spectrum owners who are suffering the wicked traps of Gargoyle's excellent *Sweevo's World*. To get 255 lives insert.

Poke 37008, 255 into the Basic header before the *Randomise Usr* statement.

For Amstrad owners here is a routine from Alan Milner of Godalming to get infinite lives on Mastertronic's *Caves of Doom*. Replace the existing header with this

```
10 Memory 5240
20 Load "", 5320
30 Poke 82525, 255
40 Call 5320
```

He also recommends using the cursor keys for slow movement and the joystick to travel quickly

Robert Gooding of Irvine has written with some Dragon tips. First of all for Microdeal's *Dark Pit*.

"There is a bug or some sadistic humour in here on the screen which says 'which way?' If you go up you are trapped behind a monster and another door traps you with an unerased copy of your last move. The only way out in either case is to have plasma ray to shoot the offending object.

"In Incentive's *Eddie Steady Go*, by typing *Fiddle* and pressing the left or right arrows you can go through all of the screens. Unfortunately there are no extra lives to be gained."

Thanks a lot, Robert and I'm sorry there aren't many Dragon tips in the Avenue, but as I've said many times it depends entirely on how much our readers contribute.

On now with our *Dragontorc* solution. We left you in the start of

Sanctuary

This has already been found by a winged demon and his company of goblins. Kill them with "*Missile*". Use "*Mantle*" to protect against demon's missiles.

If you walk into the "cursed" scroll you are transported to a doorless cell. Use the keyrod to find an exit cube. Uncurse the scroll with the sword to get the message "The vault of Locris is opened by the *Sunkey*"; ie, it is that you are looking for.

One of the goblins has the *Sunkey*. Another goblin has a green chest key. This opens three green chests. In dark room use *Light*. You will find a wand in one of these that is "cursed", use sword to uncurse it. Take the wand and the message "I can find what I hid where it is blackest" will appear.

Use the sword on magic spiders to get spells.

Unlock green chest with green key to get the message "One leads to a gate through the other locate". This is meant to be read in conjunction with the message on the *Locate* spell already found by the winged demon: "Two doors side by side, what can they hide".

In other words look for two doors side by side – one leads to a gate, ie, the exit cube and the other one is an empty room. Use *Locate* in here to find another green chest unlocked by the green key.

Take *Cursed Key* to the cursed crypt and the message "One lost, one in ruins, one in hell, one cursed" will appear which reveals where the crowns are.

Lost – (Vaults of Locris)
Ruins – (of Cantii)

Sweevo's Word from Gargoyle Games

Hell – (Hellsmouth)
Cursed – (Cursed Crypt)

This is also the order in which they must be destroyed.

To get to the two doors, two door keys have to be found. The first is hidden "where it is blackest", ie, in a black room. Use *Light* then search with the wand. The key is under a stone carving on the back wall. Also search the tomb with servant for *Wall* spell. Kill wraith with *Bane*.

Use door key to enter locked room by goblins (near start). Inside another green chest is opened by the green key. Leave the old door key and take the new one from the chest. Proceed through the dark room to the locked door and open it with the key. Through this are the "doors side by side".

Through the door use full moon and sunkey to reveal gate and cube. Leave with *Sunkey*, *Cursed Key*. Proceed to Locris for the second time.

Open the locked door with sunkey. Search tomb with the servant for *Undo* spell. Avoid the fireballs in the small room. Use *Bane* to kill the wraith. Use *Undo* to remove the curse on the doorway that takes you to the spider room. A moon symbol appears but it does not do anything. It is merely the curse made visible.

Enter the crown room. Use *Undo* to release crown and take.

Proceed to Halgar's tomb using *Return* and place the crown on anvil. (Take gold remnants for trading)

Ruins of the Cantii

This is inhabited by dwarves who throw axes. *Wall* makes you invulnerable to these. They will get friendly if you give them things. (But the elf may kill them anyway)

Use elf to attack if you wish, wither strategy can be used.

Find the squirrel – use him to search the leaves to find the stone and torch. Light the torch on the campfire. Take the bow to the elf who will give you a nut. Give this to the squirrel to crack. Take the key.

Enter the ruins with the elf. Unlock the chest with the key to get S symbol. Use this to move flagstone to get *Demon* spell and to move the flagstone in the woods to reveal an entrance.

A message says "To return take snake and fire you must make", ie, take the symbol and light the torch.

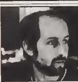
Go down. Go through door. Switch off snake generator with fire. (Place the torch on the 'S' symbol on wall) Kill the snakes with the 'S' symbol. (Use the *Slow* spell if necessary but sparingly as you must have it in the Citadel)

Open doors with the 'S' symbol. Kill snakes with the torch. Open chest with 'S' symbol. (Always leave the torch on the floor in case snakes appear)

Take out the crown symbol or sometimes an S symbol. (If it is an S symbol place them together to make a crown symbol) This is not a bug, it just usually happens in the chests when you cannot see it.

Tony Kendle

Tony Bridge's Adventure Corner



Major bugs

Sorderon's Shadow is an adventure that I have yet to see – but John Rundle has and he's not too happy with it

'I think that it's full of bugs Right at the start Beyond admit that there is a bug in the program You have to kill a Krillan for Lonar, but he doesn't tell you this After killing the Krillan you must return to the village and Lonar will say 'Well done, you are now one of us' Well, he doesn't, so there are two bugs before you have really got started.

'If you are going North and you come to a hut and then type 'enter hut', you are told that there is no hut in sight. Type 'Go North' and you are in the hut Now type 'enter hut' and you are told that you open the door and enter the hut. Nothing in the screen changes, however You can take water even if you have nothing in which to carry it, but you find that you can't drink the water. If you get killed off, the game freezes and none of the keys seem to work Actually the program is waiting for you to load in a save position, but this is not made clear in the instructions '

I hope that another reader can throw light on the bugs mentioned by John (who I know is an avid adventurer and not usually given to wingeing about the failings of a program) documentation is an important part of a program, I feel, and if someone has forked out several pounds for an adventure, then he or she is entitled to decent instructions – in fact, well-written instructions can make or break a game

While we're speaking of bugs, *Never Ending Story* from Ocean seems to have bought its fair share of disgruntled moans *The* bug here is encountered in the Spectrum version if the player attempts to head into the swamp accompanied by Artax the Horse The program then crashes Ocean, upon being contacted by victims, admits that there is a problem which has now been corrected. They will, of course, exchange any faulty tape

But they also say that Artax is not necessary in the solution of the adventure, and urge players with a duff tape to ignore the Horse and just carry on without him

I find this incredible – it may well be that Artax can be ignored, but this is surely no excuse for a major bug in a major (and not inexpensive) program such as this! By the way, my Amstrad version doesn't seem to contain this anomaly

Back in the real world, there are adventurers doing sterling work for the rest of us Don Macleod has been burning the midnight oil in compiling a database of Adventure Corners He offers this index to other readers – they should own a C64 and disc drive to benefit. Send Don a blank disc and postage for a copy

If you want the program that will create and update the database, then that will cost £3 with the disc, £5 otherwise Don Maclead, 35 Old Evanton Road, Dingwall, Ross-shire IV5 9RD

Welcome to Red Moon, copyright
(C) 1985 from Level 9
Computing.
You are on a wide, flat grassy
plain, baked by the yellow
sun. Exits are north to a
steep rock slide, east to a
pothole, south to a grassy
mound and west to a grassy
mound.
What now?

Red Moon from Level 9

Are you a Vic adventurer? If so, you may be able to help Vilmore Rochester, who is having trouble in *The Quest* on his Vic-20 As to whether there are other Vic adventures, Vilmore, I'm sure that there must be, but you don't tell me which ones you have

Maybe if someone writes to you at 18 Lanvanor Road, Peckham, London SE15 2BW, you can exchange information and help

Back in the summer, Doreen Barton wrote, asking for help in Melbourne House's *Classic Adventure* My experience of the classic has been via the original and Level 9's version, so I wasn't able to answer her questions about The Pirate with authority

Jim O'Keeffe has come to the rescue 'There is *no* Pirate in MH's version, though there is a Pirate's Chest which is treasure in its own right and must be collected. To find the Chest, start at the West end of the Hall of Mists, go south to enter the Maze, then E, S, S, S N, E, N, E, NW The Chest will be found in a Dead End To return go SE, N, W, W, Up, E, E, W, Up

'By the way, the chest can't be opened as in other versions, it's just another treasure to be deposited at the start of the game '

There's another major difference between MH's version and others. 'The Vending Machine seems to serve no purpose It's in another maze, like the original, and has a sign next to it reading *'Drop coins for new batteries'* You can drop coins, but nothing happens the machine doesn't work and doesn't need to, as you don't need new batteries In fact, your lamp never grows dim.'

Any comments that I've made in the past about *Classic Adventure* have been gleaned from the other versions I hope that MH owners haven't been unduly diverted by these anomalies

For those who want to form a little MH Classic Adventurers Club', write to Jim at 28 Sable Close, Beaver Estate, Hounslow Middlesex TW4 7PE

He can also offer help in the Gargoyle collection of *Dun Durach* and *Tir Na Nog*

Finally, a little routine for Amstrad owners who would like to see the list of words available in Level 9's *Red Moon* and *Return to Eden*. Adam Milner of Cranleigh in Surrey has worked this one out

```
10 MODE 2 MEMORY &2FFF LOAD
   "BIT1" [for Red Moon] "FIRST BIT"
   [for Return To Eden]
20 FOR A = 74800 TO &4F61 [for Red
   Moon]
   FOR A = &3362 TO &399D [for Return
   To Eden]
30 IF PEEK(A)> 90 OR PEEK (A),65 THEN
   GOTO 60
40 PRINT CHR$ (PEEK(A)),
50 NEXT
60 IF PEEK (A) = 128 OR PEEK (A)< 193
   THEN PRINT "", GOTO 50 ELSE Q =
   PEEK (A) PRINT CHR$ (Q-128), GOTO
   50
```

Adventure Helpline

Going bananas? If you are stuck in an Adventure with nowhere to turn do not despair – help is at hand

Fill in the coupon explaining your problem, send it to us and a fellow adventurer may be able to help

Remember – the system only works if those adventurers who have solved the puzzles get in touch Every week is Save An Adventurer Today (SAAT) week!

Adventure.......................on (Micro)..........................
Problem..
....
Name...
Address...
....

FAST COMPUTER REPAIRS

VIDEO VAULT INTERNATIONAL
10★ REPAIR SERVICE

ACCESS WELCOME

THE NO. 1 REPAIR CENTRE IN THE U.K. OTHERS FOLLOW

24 HOUR TURNAROUND

WHILE YOU WAIT SERVICE CALL FOR APPOINTMENT

KEYBOARD FAULTS SPECTRUM ONLY £8.95

SPECTRUMS REPAIRED for only £19.95
including PARTS · INSURANCE and P & P.

NO HIDDEN EXTRAS We don't give you a between price and let you guess the bill we give you a 100% fixed price NO extras. We don't need to boast about our service we have 1000's of customers from all over the world highly delighted with our service and help. Only 20 minutes from Manchester Centre. Commodore 16s Commodore 64 Vic 20 also repaired call us for details. Please note we never charge between prices. Don't wait weeks for your repair we turn around all computers in 24 hrs. All repairs carry a full 3 month guarantee plus on every Spectrum we repair we send you 4 free games worth £25.80 for your enjoyment and pleasure.

- While you wait service by Professional Computer Engineers.
- 3 month written guarantee on all repairs.
- International Repair Company. We repair computers from all over the world.
- All computers sent by Mail Order turned around in 24 hrs.
- Most Spectrums repaired within 45 minutes.
- All 64 cr's insured for return journey.
- Keyboard faults only £8.95.
- School repairs undertaken - discount available.
- Free software with each Spectrum repaired.
- Over 8 years experience working with computers. All computers fully tested.

HOW TO SEND YOUR COMPUTER Just parcel your computer in suitable wrapping enclosing £19.95 for Spectrum repairs please do not send power supplies. Commodore computers just send £1.75 (U.K. Eire I.O.M. C.I.) or £6.50 (Europe/Scandinavia) with your address or phone number and we will contact you same day by phone or letter with quote. If you prefer, please call us and we will give you a quote over the phone, we aim to please. That's what made us the most reliable and No. 1 Service Centre in the U.K.

TRADE REPAIRS most welcome

(SPARES AVAILABLE THROUGH OUR D.I.Y. SECTION.)

BEST SERVICE — BEST PRICES!

COMMODORES
* NOW REPAIRED *

Commodore 64, C16's, Vic 20, 1541 Disk Drives. Same Day Service. Call us for details or purchase the I.C's from our D.I.Y. section

NEW VIDEOVAULTS 80K UPGRADE KIT. WATCH THIS SPACE FOR DETAILS AVAILABLE JANUARY 1986

THE LOGICAL CHOICE

THERE'S NOBOOY OUICKER IN THE BUSINESS AT PRICES THAT CANNOT BE BEATEN

*SPECIAL KEYBOARD UPGRADE

Why not upgrade your Spectrum into a new keyboard. We can upgrade your old Spectrum into a new D.K. Tronics keyboard for only £31.50 which includes fitting, return P & P and V.A.T.

Normal retail price £49.95 without fitting

ORDER NOW!

SPECIAL OFFER!
YOU CAN'T REFUSE
16K to 48K Upgrade

Upgrade your 16K Spectrum to 48K Spectrum for only £19.95 fitted including V.A.T. and P & P (issue 2 / 3 only)

(Retained by Public demand.) To order the Upgrade Kit (only £17.95.)

VideoVault D.I.Y. CORNER

We regret we cannot show all the components available. Just give us a call and we can quote you over the phone, delivery by 1st class post.

Spectrum Parts

Z80B CPU	3.50
4116 Rams	1.00
ZTX650	0.60
Transistor ZTX213	0.60
Transistor ZTX313	0.50
Power Supply Units	8.95
Feet Each	0.25
16K to 48K Upgrade Kit	17.95
Sockets 16-40 Pin	10-80p
Cassette Leads	3.50
T.V. Lead	3.50
Keyboard Membranes	4.00

Commodore 64 Chips

6526	23.00
6510	23.00
6581	23.00
901227-03	23.00
901226-01	23.00
901225-01	23.00
6569	23.00
4164 Rams	3.00
Power Supply Units	29.00

All prices + P & P £1.50 But include V.A.T.

TRADE ORDERS WELCOME

STOP PRESS

MANCHESTER BRANCH opening FEBRUARY in the City Centre. Sorry for delay to all our Manchester customers

VIDEOVAULT HEALTH WARNING!!! Sending your computer to any other Repair Centre can seriously Damage its Health

7 OPEN DAYS A WEEK

SERVICE ENGINEERS REQUIRED ONLY 1st CLASS ENGINEERS NEED APPLY FOR OUR MANCHESTER BRANCH OPENING SHORTLY

VideoVault Ltd

Telephone Glossop (STD 04574) 66555/67761
140 High St West, Glossop, Derbyshire, England

SPECIAL OFFER 4 FREE GAMES NORMAL RECOMMENDED RETAIL PRICE £25.80 YOURS FREE WITH EVERY SPECTRUM REPAIR

CLASSIFIED

Semi-display — £7 per single cc (+ VAT)
Lineage — 30p per word (+ VAT)

CALL JON BEALES on *01-437 4343* FOR SEMI-DISPLAY ADVERTISING

SOFTWARE

DUPLICATION

CLASSIFIED ADVERTISING RATES:

Line by line 30p per word, minimum 20 words

Semi-display £7 per single column centimetre, minimum length 2 cm (Please supply A/W as PMT. Or supply rough setting instructions.)

These rates do not include VAT

Conditions: All copy for Classified section must be pre-paid. Copy date 7 days before publication.

If you wish to discuss your ad PLEASE RING Jon Beales 01-437 4343.

Here's my classified ad.

(Please write your copy in capital letters on the lines below.)

		Please continue on a separate sheet of paper	

I make this ______ words at ______ per word so I owe you £ ______

Name ______

Address ______

______

______

Telephone ______

Please cut out and send this form to: Classified Department, *Popular Computing Weekly*
12-13 Little Newport Street London WC2H 7PP

SERVICES

COMMODORE REPAIRS by Commodore approved engineers. Vic 20 Modulators £9.50. Vic 20 from £14.50. CBM64 etc. for more details write or tel. B. C. Bunce & Son, 36 Burlington Road, Burnham, Bucks SL1 7BQ. Tel. 06286 61696

WOULD YOU like to make money with your computer? Full or part time, high earnings possible, no skills needed. Send stamp for details. Barn corn Publications, 30 Rickwood, Horley, Surrey RH6 8DF

TELEX YOUR CLASSIFIED COPY TO: 296275 SUNRGY

FOR SALE

SPECTRUM 48K Saga 1 keyboard interface 1, 2 microdrives, 10 cartridges, ZX printer, 4 spare rolls, Interface 2, joystick, cassette recorder, software Tasword, Pascal, C, assembler, Hobbit, Alien 8, lots more, books. Quick sale £195. Tel Julian 01-942 9661 ext 260 daytime.

BBC 6502 second processor with Hi Basic and DNFS. Hardly used £140. Tel 01-462 5780 after 7pm.

BBC STUFF Music 500, Demon Modem + Software, Solidisk 64K + S/W packs 1 + 2, Tons of Roms, AMX Mouse + Pagemaker, Joystick, Billions of programs (cassette + disk), Elite + all popular games. Tel 01 906 4982 evenings.

SPECTRUM 48K printer, turbo joystick interface, joysticks, cassette recorder, games + carrycase for Commodore 64 + cassette. Will sell £140 ono. Tel 0836 65620 after 6pm.

DMP1 Matrix Printer, new plus Amstrad wordprocessor software, nine months guarantee £99. Tel 0422 57171 ext 301.

ATARI 520ST with DR Logo, Dr Basic and some books, unused still in boxes, must sell £525 ono. Tel Nottingham (0602) 262498

MAGAZINES

AMSTRAD

FOR HIRE

MIDLAND COMPUTER LIBRARY

A SUBSIOIARY OF PLATINUM GOLD

- OVER 4,000 different titles available for hire for the COMMODORE SPECTRUM BBC AMSTRAD ATARI and MSX computers
- ARCADE ADVENTURE EDUCATIONAL and BUSINESS softwars too
- HIRE PRICES from onlay 75p INC P & P
- 205 DISCOUNT off all purchase software
- FREE CATALOGUES
- FREE HINTS AND TIPS
- FAST RETURN OF POST SERVICE (if reserves are given)
- ALL GAMES manufactures ORIGINALS with full documentation
- OVER 6,000 satisfied members
- EUROPEAN members welcome
- LIMITED PERIOD ONLY FREE MEMBERSHIP
- Fully computerised system keeps track of your order. We pride ourselves in being the most professional Hire Library in the United Kingdom with staff of 14 who knows what the word service means Backed by our own software company and programmers

MIDLAND COMPUTER LIBRARY:
28 COLLEGE STREET, WORCESTER, WR1 2LS.
TEL: 0905 611072.

Please rush me my tree catalogue stating machine

Name ....

Address ....

VISA

ACCESSORIES

POWER PLUB Spectrum power controller Suppressed voltage spikes and interference. Built in computer reset switch and cassette load/save switching all for only £15.98 inc or SAE for details Hirst Electronics The Windmill Mill Road Elston Notts NG23 5NR

MEMOTECH COMPUTERS
AND ACCESSORIES

MTX 500 COMPUTER	£59.95
MTX 512 COMPUTER	£95.00
DMX 80 PRINTER	£175.00
500K DISK DRIVE & INTERFACE	£199.00
1MB DISK DRIVE & INTERFACE	£222.00
NEWWORD ROM	£36.00
PASCAL ROM	£35.00
SPECULATOR ROM	£35.00

All the above prices are fully inclusive. We stock the entire Memotech range. [illegible]

UK HOME COMPUTERS
[illegible] SWINDON WILTS.
24-hr Phone Service [illegible]

256 SHADES for the artist. Microdrive £3.30 cassette £1.99 Ch/Po to Microtech 88 Whitely Spring Crescent Ossett West Yorkshire WF5 0RF

C15 BLANK CASSETTES
WITH LIBRARY CASES
£20 per 100 fully inclusive

UK HOME COMPUTERS (DEPT PCW)
80 Churchward Ave Swindon
Wilts 0793 695034

SHARP MZ80B MZ80FD dual disc drive Z80P5 printer CPM2.2, includes basic Pascal forth Immaculate £500 Phone Parish Darlington 0325 720937

PADDLES JOYSTICKS etc available for Spectrum/+ Amstrad BBC Commodore send for list (SAE) to O M Perps 198 Sherard Road, Forest Gate London E7 8DZ

3" DISKS
£39 FOR 10
INCLUSIVE OF VAT & DELIVERY

3½" DISKS

DS135TPI	£3[illegible] for 10
SS135TPI	£25 for 10

INCLUSIVE OF VAT & DELIVERY
CHEQUES/PO s to:
MICRO RESOURCES LTD
Southfield House
11 Liverpool Gardens
Worthing Sussex BN11 1RY
ACCESS VISA WELCOME
TEL (0903) 213174

APPLE DOT Matrix printer as new Reason for sale purchase of Amstrad PCW8256 £150 ono 01-434 4371 evenings/weekends

NEW DISC SALE 10 5¼" SS/DD 48TPI soft sector for £10 inc p&p + labels etc cheque to A Griffiths 86 The Firs Whitchurch Shrops SY13 1NC

48k SPECTRUM microdrive interface 1 cable joystick software inc Pascal C Devpack Tasword many games £225 Tel Mike 021-449 5460

BLANK CASSETTES
WITH LIBRARY CASES

	C10	C15	C20	C30
10	3.80	4.00	4.15	4.15
20	7.00	7.20	7.35	7.50
50	15.00	15.20	15.35	15.50
100	27.00	28.00	29.00	29.00

Fully Inclusive (COD [illegible] extra)
[illegible]

5¼" DS/DD DISKS
10 for £12.00 inc plastic case

3½" DISKS
10 SS/DD — £26.00
10 DS/DD — £34.00
Guaranteed Fully Inclusive
Postage/Packing etc

RING US NOW (0793) 695034
UK HOME COMPUTERS 82 CHURCHWARD AVE.
SWINDON, WILTS SN2 1NH

BOOK BARGAINS for Oric Vic 20 C64 Spectrum and Dragon owners SAE to CBL Freepost Birmingham B26 6BR or Phone 021-706 6080

HANOMADE LIMITED EDITION SOLID MAHOGANY COMPUTER TABLE

to take most types of home computers at the unbelievable price of £165 inc VAT (Delivery £15) Don't confuse this with mahogany veneer this is solid mahogany **For further information phone Newtown 0686 24001**

AMSTRAD RS232 interface £35 ono Teac 5¼" disc drive including all leads £70 ono Honeysoft RS232 interface £20 ono Hitachi 3" disc drive £75 ono

SPECTRUM 48k Complete computer system includes cassette recorder joystick, microspeech lots of software etc. Worth £500 sell for £180 ono Tel Camberley 33103

WANTED

WANTED SOFTWARE
WANTED URGENTLY

Frozen Images Software urgently require games and educational programs for the Amstrad and Acorn Electron computers. Top royalty rates or buck payment. Send your best software for instant approval to:

Frozen Images Software
2 Knockholt Rd
Halstead
Nr Sevenoaks
Kent TN14 7EP

EPSON FX80 FX100 or similar printer wanted also colour monitor Tel 01-340 5479

CASH FOR BASIC GAMES

Can you write games programs in Basic (or possibly machine code) for the Amstrad CBM64 or Spectrum? If so then we would like to hear from you. We will pay outright cash for your games programs. Send in samples (on cassettes) for immediate evaluation.

Send to Software Editor, Magnum Computing 3 Wensley Close Harpenden, Herts AL5 1R2

WANTED! CBM64 Spectrum programmes view budget marketing worldwide Send tapes (+ normal fee) to Mr Che Amir 443 Cheetham Hill Road Manchester M8 7PF

RECRUITMENT

ARE YOU A NUTTER WHO CAN PROGRAM?

Would you like to join the two nuttiest at Domark best [illegible] 280 and 6502 programmers with experience on several machines stand the best chance of joining the mad-house. Please send details and photo to:

Domark Ltd 204 Worple Road, London SW20 8PN

YOUR PERSONAL CENTRONICS PRINTER

£99 plus vat
plus £8 p+p

- *DRAFT MATRIX PRINT*
- *NEAR LETTER QUALITY*
- *SUBSCRIPT SUPERSCRIPT*
- *CONDENSE EMPHASIZE*
- *96 CHAR+48 EURO+16 MATHS*
- *GRAPHICS*
- *OPTIONAL TRACTOR*

ROCK HALL
TEL: (0533) 313531

New'Star Software Limited require an

APPLICATIONS SOFTWARE ENGINEER

salary c£10,000

Can you install and assess applications software packages (word processing spreadsheets databases accounts etc)? Are you capable of producing small utility programs in C and assembly language?

You must have a good knowledge of CPM80 and familiarity with PCDOS CPM86 Concurrent DOS CPM68K and AmigaDos would also help

Apply in writing stating age present work experience and objects to
William Poel,
New'Star Software Ltd, 22 Middleton Road, Brentwood, Essex CM14 8DL

Charts

Amstrad

1	(–)	Sky Fox	(Ariolasoft)	£9.95
2	(2)	They Sold A Million	(Hit Squad)	£9.95
3	(6)	Caves Of Doom	(Mastertronic)	£1.99
4	(6)	Yie Ar Kung Fu	(Imagine)	£7.95
5	(8)	Grand Prix 3D	(Amsoft)	£8.95
6	(2)	Soul of a Robot	(Mastertronic)	£1.99
7	(3)	Finders Keepers	(Mastertronic)	£1.99
8	(–)	Spellbound	(Mastertronic)	£2.99
9	(1)	Formula One Simulator	(Mastertronic)	£1.99
10	(–)	Nonterraqueous	(Mastertronic)	£1.99

Atari

1	(3)	Action Biker	(Mastertronic)	£1.99
2	(1)	Chimera	(Firebird)	£3.95
3	(2)	Mercenary	(Novagen)	£9.95
4	(6)	Smash Hits 4	(English)	£9.95
5	(4)	Goonies	(US Gold)	£9.95
6	(7)	Spy Hunter	(US Gold)	£9.95
7	(8)	King of the Ring	(Gremlin Graphics)	£9.95
8	(–)	Air Wolf	(Elite)	£9.95
9	(–)	Eidolon	(Activision)	£14.95
10	(5)	Electra Glide	(English)	£9.95

BBC

1	(1)	Yie Ar Kung Fu	(Imagine)	£9.95
2	(2)	Way of the Exploding Fist	(Melbourne House)	£9.95
3	(8)	Citadel	(Superior)	£9.95
4	(–)	Speech	(Superior)	£9.95
5	(3)	Strike Force Harrier	(Mirrorsoft)	£9.95
6	(4)	Repton 2	(Superior)	£9.95
7	(6)	Computer Hits (10)	(Beau Jolly)	£9.95
8	(5)	Gyroscope	(Melbourne House)	£8.95
9	(–)	Hypersports	(Imagine)	£12.95
10	(10)	Match Day	(Ocean)	£9.95

Commodore 64

1	(–)	Rock 'N' Wrestle	(Melbourne House)	£9.95
2	(1)	Bounder	(Gremlin Graphics)	£9.95
3	(2)	Koronis Rift	(Activision)	£9.95
4	(–)	Kane	(Mastertronic)	£1.99
5	(–)	Back To The Future	(Electric Dreams)	£9.95
6	(13)	Critical Mass	(Durell)	£9.95
7	(5)	Last V8	(Mastertronic)	£2.95
8	(4)	Rambo	(Ocean)	£8.95
9	(3)	Commando	(Elite)	£9.95
10	(–)	Dragonskulle	(Ultimate)	£9.95

Spectrum

1	(1)	Winter Games	(Epyx/US Gold)	£7.95
2	(2)	Commando	(Elite)	£9.95
3	(7)	Tomahawk	(Digital Integration)	£9.95
4	(3)	Rambo	(Ocean)	£7.95
5	(–)	Gunfright	(Ultimate)	£7.95
6	(–)	Zoids	(Martech)	£7.95
7	(–)	Caves of Doom	(Mastertronic)	£1.99
8	(4)	Yie Ar Kung Fu	(Imagine)	£7.95
9	(8)	Saboteur	(Durell)	£8.95
10	(9)	Chin	(Firebird)	£14.95

SS figures compiled by Gallup/Microscope

Top Twenty

1	(–)	Rock 'N' Wrestle *(C64)*	**Melbourne House**
2	(1)	Yie Ar Kung Fu *(Various)*	**Imagine**
3	(2)	Commando *(Spectrum/C64)*	**Elite**
4	(3)	Winter Games *(Spectrum/C64/Amstrad)*	**US Gold**
5	(10)	Action Biker *(Spectrum/C64/Atari/C16)*	**Mastertronic**
6	(12)	Bounder *(Spectrum/C64/Amstrad/BBC)*	**Gremlin Graphics**
7	(8)	Computer Hits 10 *(Spectrum/C64)*	**Beau Jolly**
8	(4)	Rambo *(Spectrum/C64)*	**Ocean**
9	(7)	They Sold A Million *(Spectrum/C64/Amstrad)*	**Hit Squad**
10	(6)	BMX Racers *(Spectrum/C64/C16)*	**Mastertronic**
11	(–)	Caves of Doom *(Spectrum/C64/Amstrad)*	**Mastertronic**
12	(18)	Way Of The Exploding Fist *(Various)*	**Melbourne House**
13	(–)	One Man And His Droid *(Various)*	**Mastertronic**
14	(11)	Finders Keepers *(Spectrum/C64/Amstrad)*	**Mastertronic**
15	(9)	Rockman *(Spectrum/C64/C16/Vic 20)*	**Mastertronic**
16	(9)	Formula One Simulator *(Various)*	**Mastertronic**
17	(17)	Hypersports *(Various)*	**Imagine**
18	(15)	Koronis Rift *(C64/Atari)*	**Activision**
19	(16)	Elite *(Spectrum/C64/BBC)*	**Acornsoft/Firebird**
20	(–)	Tomahawk *(Spectrum/C64)*	**Digital Integration**

Figures compiled by Gallup/Microscope

Readers' Chart No 59

1	(4)	Commando *(Spectrum/C64)*	**Elite**
2	(2)	Elite *(Spectrum/C64/BBC)*	**Firebird/Acornsoft**
3	(3)	Winter Games *(Spectrum/C64)*	**Epyx/US Gold**
4	(5)	Lord of the Rings *(Spectrum/Amstrad)*	**Melboure House**
5	(1)	They Sold a Million *(Spectrum/C64/Amstrad)*	**Hit Squad**
6	(6)	Yie Ar Kung Fu *(Spectrum/C64/Amstrad/BBC/MSX)*	**Imagine**
7	(8)	Spellbound *(Spectrum/C64)*	**Mastertronic**
8	(7)	Way of the Exploding Fist *(Various)*	**Melbourne House**
9	(10)	Rambo *(Spectrum/C64)*	**Ocean**
10	(–)	Mercenary *(C64/Atari)*	**Novagen**

Winning Phrase No 60 "Team trimmed, Leon's gone", from J Keneally of Exeter, who wins £25. Honourable mentions go to R Robertson of Lanarkshire for "Hen was dim teenage comrade", and Mrs C Height of Doncaster for "Downing St create a mole".

Now voting on week 62 – £25 to win

Each week *Popular* is compiling its own special software top ten chart – compiled by YOU.

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever – but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's Readers' Chart, published above.

You can still vote in the chart without making up a slogan – but you won't be in with a chance of winning the prize.

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP.

Voting for Week 62 closes at 2pm on Wednesday February 12, 1986. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name .... **My top 3: Voting Week 62**

Address .... 1..

.... 2..

.... 3..

My phrase is: ....

New Releases

IRRITATING?

The problem is that the BBC computer has no real tradition of budget software where games like *Broanmaze* can be issued harmlessly without having to be reviewed with the major commercial release

Broanmaze is a simple maze game in which you collect things and dodge little insects, the insects can be destroyed by remote control bombs you can place at strategic positions and then detonate. The same is true of the maze walls – the mazes are generated randomly and so often you may find that there is no route through without knocking a few holes here and there

As the levels progress you get different types of baddie and things speed up There are several games *Broanmaze* reminds me of, not least something put out on the Spectrum a while back called *Eric and the Floaters*

It's nothing technically, though it could be said to have a certain kind of irritating charm. At £1 99 I'd be kind and say you might get a few hours entertainment out of it, but at £4 95 I'm afraid it's a case of you've got to be kidding

Program *Broanmaze*
Price *£4 95*
Micro *BBC*
Supplier *Smedley*
Newhouse Turner
39 Baker Street
Potters Bar
Herts
EN6 2DZ

PODDMAN GEORGE
IN
BROANMAZE

CUSTOMISED

Doors of Doom is the latest Amstrad game to go out on the Amsoft Gold label – previously distinguished by some of the least impressive titles to be released in a 'mega' range ever

Doors of Doom is better and for those who enjoy customising games an essential purchase

At its simplest *Doors of Doom* is a highly detailed, nicely animated collect and dodge game with big graphics and (for the Amstrad) quite clever sound The idea is to collect the parts of a magical door whilst battling with various kinds of alien To help you, there are various objects scattered around like Teleports (gets you to another section of the screen's layout) and, inevitably, a laser

The real point of the game, though, is that you can completely redesign the scrolling layout to your own specifications, using an editor program supplied with the cassette. Although there are a few restrictions about what can be placed where, in general the system is very flexible indeed. It means that the game can be revitalised when the existing format starts to pall

Not 'the best game you have ever bought for your Amstrad' as it says on the box, but potentially, if you use it to the full, one of the few Amstrad games to deserve that 'Gold' tag

Program *The Doors of Doom*
Price *£9 95*
Micro *Amstrad*
Supplier *Amsoft*
169 Kings Road
Brentwood
Essex
CM14 4EF

Pick of the week

PRIVATE EYE

Movie is the latest game released by Ocean under the revitalised Imagine label. *Movie* is about gangsters and mixes *Knight Lore* style 3D animation, with Icon commands and a faintly stylised graphic design Unlike *Knight Lore*, the playing style of the game is as much puzzle solving as it is dodging obstacles – in this case, rooms full of wandering hoodlums

Your central character is a Philip Marlow style private eye complete with mac Your task is to find a girl – Tanya – who can give you the information you need to find a missing tape held in the heavily guarded HQ of Bugs – chief mobster. The problem is that Tanya has a double – her evil sister Vanya – who is in league with Bugs and who will try to ensure your demise You have to discover who is who

Rooms are presented in the classic *Knight Lore* format – as though a camera is placed high in the bottom right hand corner

Control is via a series of Icons which represent Move, Pick up, Drop, Inventory, Throw, Shoot, Punch and most unusual of all, Talk The Talk option produces a speech bubble on screen into which you can type simple sentences

It really is a most intriguing and stylish game and in its own quiet way extends yet further the boundaries of what an arcade adventure can be Excellent and reasonably priced.

Program *Movie*
Price *£7 95*
Micro *Spectrum*
Supplier *Imagine Software*
6 Central Street
Manchester
M2 5NS

This Week

Program	Type	Micro	Price	Supplier
Barchou	Arc	Amstrad	£1.99	Central Solutions
Doors of Doom	Arc	Amstrad	£9 95	Amsoft
Mansion	Arc	Amstrad	£1.99	Central Solutions
The German Master	Ed	Amstrad	£8.95	Kosmos
The Spanish Master	Ed	Amstrad	£8.95	Kosmos
Cluedo	S	Amstrad	£8.95	Leisure Genius
Amsdoc	Ut	Amstrad	£12.95	Session Developments
Amstrad Disc editor	Ut	Amstrad	£8.50	DW Software
Back to the Future	Arc	Commodore 64	£9 95	Electric Dreams
Groovy Darden	Arc	Commodore 64	£1 99	Central Solutions
Netterraqueus	Arc	Commodore 64	£1.99	Mastertronic
Globz	Arc	DL	£5 00	Smiling Software
The Smiling Icon T	Ut	QL	£8.00	Smiling Software
Brian the Bold	Ad	Spectrum	£1.99	Central Solutions
Brian/Survival	Ad	Spectrum	£2 99	Central Solutions
Classroom Chaos	Ad	Spectrum	£1.99	Central Solutions
Countdown	Ad	Spectrum	£1.99	Central Solutions
Desperado	Ad	Spectrum	£1.99	Central Solutions
Father of Darkness	Ad	Spectrum	£1.99	Central Solutions
Murder/Father of Dk	Ad	Spectrum	£2.99	Central Solutions
Picture/Countdown	Ad	Spectrum	£2.99	Central Solutions
Prelude	Ad	Spectrum	£1 99	Central Solutions
Survival	Ad	Spectrum	£1 99	Central Solutions
The Curse of Shaleth	Ad	Spectrum	£1 99	Central Solutions
The Philosophers St	Ad	Spectrum	£1 99	Central Solutions
A Picture of Innocen	Ad	Spectrum	£1 99	Central Solutions

VISUAL PUNS

Not having ever found Russ Abbot the slightest bit funny, I greeted *Basildon Bond*, the computer game with less than total enthusiasm "Oh, my God, it'll be awful" was more like it. Actually, the game is far from awful, it's good even

The idea is that Basildon Bond, one of Russ Abbot's guises, is charged with rescuing the real Russ in time for his comedy show Releasing Russ involves finding jokes (awful visual puns mostly) and then logging them into a computer The computer will respond with an appropriate answer and set another joke

As ever the heart of the game is picking up the right object at the right time as you hunt around the various rooms of a television studio that forms the playing area. To defeat the occasional nasties like cameras, for example (the cameras in this game have a chaotic independence previously revealed only on Breakfast Time), you may call upon the services of Cooper Man who sweeps across the screen The only problem is that sometimes Cooper Man is replaced by Blunder Woman who, far from clearing the screen of baddies, bops you *on* the head.

Though quite simple, the graphics are large and neatly reflect the generally humorous approach to the game The only reason I can't be completely enthusiastic about the game is the price – £9 99 on cassette, that's pushing it when you consider some of the competition in that price bracket. It would have been fine at around £6 or so.

Program *Basildon Bond*
Price *£9.99*
Micro *Commodore 64*
Supplier *Probe Software*
155 Mitcham Road
London SW17

CURIOUS

The Music System for the Commodore 64 by Rainbird Software was an astoundingly sophisticated yet very user friendly package that revealed just how powerful the Sid chip could be Rainbird have produced a similar package for the Amstrad – not highly regarded for its sound properties

The Music System on the Amstrad is a rather curious affair Though extremely well designed, visually attractive and flexible it, a) has some curious restrictions and b) is limited by a sound chip that just isn't capable of anything very spectacular Whereas the Commodore version of the program was professionally viable (just, and in the advanced Midi version very useful indeed), the Amstrad version is only suitable for fiddling around and maybe, for musical education purposes

Obviously, that the sound chip isn't capable of much is hardly Rainbird's fault and in a sense it s precisely because so much work has gone into this package and it is so powerful that the sense of 'marvelous but what's the point' is heightened.

The package uses a series of pop down menus and overlays to give you access to everything from basic insertion of notes onto the stave to subtleties of pitch notation, accents, repeats and general control of voice parameters, music files and the like The music can be entered either by tapping away on the Qwerty keyboard, in real time or actually entering notes on to the on screen score

It is easy to use and flexible in all but a few respects, but these odd restrictions are most curious For example, the tempo is not fine tunable – there are only a set number of options, 16 in total. That may be enough for most purposes but why limit it at all?

Similar things can be said of the sound parameters There are only seven envelopes available and apparently only one waveform, although you can mix in white noise and change the attack and decay of the volume (which is what most people call the Envelop in the first place) True many of these restrictions are the result of the hardware but, again, the end results are never better than mediocre

Lest this sounds like a poor review let me be clear, Rainbird have worked wonders with program design and presentation, in that sense the program is excellent, but frankly I don't think the Amstrad's sound facilities merit all the effort You can argue that the program is an educational tool but in those terms I have seen other, cheaper, packages specifically designed for that purpose, which are more suitable

Program *The Music System*
Price *£15 95 (cassette)*
£19 95 (disc)
Micro *Amstrad 464, 664, 6128*
Supplier *Rainbird*
Wellington House
Upper St Martins Lane
London WC2H 9DL

This Week

Barchou	Arc	Spectrum	£1.99	Central Solutions
Dungeon Dare	Arc	Spectrum	£1 99	Central Solutions
Greatest Show/Philee	Arc	Spectrum	£22.99	Central Solutions
Movie	Arc	Spectrum	£7.99	Imagine
The Greatest Show	Arc	Spectrum	£1 99	Central Solutions

Key **Ad** – adventure **S** – strategy-simulation
Arc – arcade **Ut** – Utility **Ed** – education

Amsoft, Brentwood Houes 169 Kings Road Brentwood, Essex 0277 230222 **Central Solutions**, 500 Chesham House 150 Regent St London W1R 5FA, 01-624 1389 **DW Software,** 62 Lescalles Avenue, Withernsea North Humberside, HU19 2EB, 09642 2070 **Electric Dreams**, 31 Carlton Crescent, Southampton, Hampshire SO1 2EW **Imagine,** Imagine Software 6 Central Street, Manchester M2 5NS **Kosmos**, 1 Pilgrims Close, Harlington, Dunstable Bedfordshire LU5 6LX **Leisure Genius**, 3 Montaqu Row, London W1H 1AB 01-935 4622 **Mastertronic,** 8-10 Paul Street, London W1R 7DB **Session Developments,** 12 Falmouth Road, Congleton, Cheshire, CW12 3BH 0260 3BH 0260 279921 **Smiling Software**, 26 Dale Road, Marple Stockport, SK6 6HA, 061 427 5245

Media values

Micro Live's answer to *What's My Line* at the *Which Computer?* show, with Sir Clive, Alan Sugar and Chuck Peddle (designer of the original Commodore Pet) on a panel, answering questions from the audience was unintentionally quite revealing

On the subject of the QL, Sir Clive commented that he thought his company had rushed into producing a 68000 processor based machine too quickly, without thinking what people would use it for.

He said he was disappointed that the QL had not taken off in the same startling way as the Spectrum, which is what he had hoped when the machine was launched.

The reason for its 'failure' was, he said, because the world wasn't ready for 16-bit machines

It was fascinating to see Sir Clive make this U-turn. Only a few months earlier the 68000 processor series was being hailed by Sinclair as 'the architecture for the remainder of this decade'. How things change!

In fact, what Sir Clive now says is right in one sense – the QL has undoubtedly failed to live up to expectations But the reasons for its disappointing performance have little to do with the Motorola 68000 chip series, or the world's readiness to receive it.

The question at issue here is to do with what the Americans love to call 'media values' People buy micros primarily for entertainment. By that, I don't just mean games I mean graphics, programming, music, communications, and so on as well.

But they do buy micros for relaxation, rather than to take their work home with them

So when you start to look at the machine which will be the next big seller after the Spectrum, and which will eventually take over from it, you have to be looking at enhanced 'media values', a machine with improved graphics, plotting, colour, sound, resolution and the ability to manipulate large blocks of data and put them to the screen very fast

Now look at the QL It may well have been based on the 68008 processor, but as a machine it just doesn't deliver Its graphics handling is awkward and memory expensive, its sound considerably inferior to that of the Commodore 64, and the machine is – at least for doing everything except mathematical calculations – slow

As a result, much of its software just doesn't look worthy of a new generation machine

Whether Sir Clive's reasoning that the UK isn't ready for 16-bit is correct or not will shortly be seen

The Atari 520ST is capable of providing the expected 'media values' (the Amiga even more so, but it's too expensive) and it should soon be available at around the original price of the QL, for just the basic console

Then we'll see if there is a demand for 16-bit

My guess would be that there definitely is.

David Kelly

Puzzle No 194

Today is a rather special day for May and her brother David You see, not only do the digits of Mary's age in reversed order give David's age, but David's age is also equal to Mary's age plus half of Mary's age

Does all this seem a little confusing?

In fact, given the above information you should be able to work out just how old they are

Oh yes, one more thing By 'age' I mean age in *days*, not years!

Solution to Puzzle 190

The tanks have sides of 17/21 and 37/21 feet. The sum of the cubes of these numbers is equal to six.

```
10 FOR DENOM=11 TO 99
20 FOR N1=10 TO DENOM-1
30 FOR N2=DENOM+1 TO 99
40 LET VOLUME=(N1*N1*N1)
/(DENOM*DENOM*DENOM)+
(N2*N2*N2)/(DENOM*DENOM
*DENOM)
50 IF VOLUME=6 THEN
PRINT"(";N1;"/";DENOM;")
CUBED + (";N2;"/";
DENOM;") CUBED =6"
60 NEXT N2
70 NEXT N1
80 NEXT DENOM
```

Note that the denominator (B) is the same in each case Therefore we require to find the two numerators such that the sum of the cubes is equal to six Each component part has a two-digit value In the case of the two numerators, one has a value of less than the denominator, and one has a value of more, since we are told that the volume of the smaller tank is less than one cubic foot, and, by inference, the larger will therefore be greater than one cubic foot.

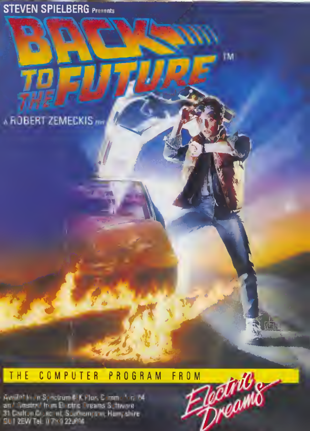
Winner of Puzzle No 189

The winner is J Frank Hughes of Denbigh in Clwyd, who will be receiving £10

Rules

The closing date for puzzle 194 is March 5.

The Hackers


STEVEN SPIELBERG Presents
BACK TO THE FUTURE
TM
A ROBERT ZEMECKIS FILM
THE COMPUTER PROGRAM FROM
Electric Dreams
SOFTWARE
31 Carlton Crescent, Southampton, Hampshire


AMSTRAD £8·95
ZX SPECTRUM £7·95
COMMODORE 64 £8·95
Yie Ar KUNG-FU
THE ARCADE SMASH COMES HOME!
Also for the BBC Micro 9.95
Current Nº1
Now released for the COMMODORE 64
Imagine
...the name of the game
Konami
Imagine Software is available from WHSMITH John Menzies WOOLWORTH LASKYS Rumbelows Greens
Spectrum Shops and all good dealers.
Imagine Software (1984) Limited • 6 Central Street • Manchester M2 5NS • Tel 061 834 3939 • Telex 669977